

ABSTRACT

Title of Document: FELIS: IDENTIFYING OPPORTUNITIES FOR CHANGE

Theresa Marie Lucarelli, Master of Architecture, 2014

Directed By: Professor, Garth Rockcastle, FAIA, School of Architecture, Planning and Preservation

Although many cats are loved and well cared for by enthusiastic and compassionate owners, tens of millions of cats suffer from human neglect and ignorance, leading to low adoption rates and high euthanasia numbers across the world. Of all cats that enter shelters, 70 percent are euthanized. In addition to the millions of cats that reside in shelters, there are approximately 50 million stray and feral cats, compared to 76 million pet cats in the United States.

This thesis serves to identify, understand, and analyze the diverse roles cats play in the lives of humans and general ecological well-being. It is necessary to critically and creatively analyze the human relationship to cats throughout history, as well as how contemporary architecture and urbanism has and is continuing to do cats a disservice through an inattention to and neglect of their needs. The central question I will seek to address is: How can accommodations be designed to provide spaces that

promote a happy and healthy environment for cats and for humans and enhance the relationship between humans and cats?

FELIS: IDENTIFYING OPPORTUNITIES FOR CHANGE

By

Theresa Marie Lucarelli

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of Architecture
2014

Advisory Committee:
Professor Garth Rockcastle, FAIA, Chair
Associate Professor, Brian Kelly
Assistant Professor, Jana Vandergoot

© Copyright by
Theresa Marie Lucarelli
2014

Dedication

This thesis is dedicated to my cat, Arwen, who we adopted from an animal shelter. If had not taken her home on January 4, 2014 she would have most likely become extremely ill and passed away. Now, we cannot imagine our lives without her; she brings joy, compassion, and support. This thesis aims to propose a more efficient and financially feasible method of holding and caring for companion animals prior to them finding their future homes. These animals are central to our ecological well-being as humans and should reside in a healthy and considerate environment.

Table of Contents

Dedication	ii
Table of Contents	iii
Chapter 1: Introduction	1
Challenges Giving Rise to this Thesis	1
Scope.....	1
Definitions.....	3
Key Considerations	3
Social Considerations.....	4
Economic Considerations	4
Amplification of Benefits	5
Chapter 2: Thesis Topic Research	7
Understanding the Subject	7
Balance.....	7
Hunting	10
Hearing.....	10
Socializing.....	11
Spatial Relationships.....	12
Cats through History	13
Chapter 3: Program & Site Research Data	15
Identification of Urban Issues	15
Recent Global Awareness	16
Design Problem Identification	18
Program Selection	19
Building Type Selection Rationale	19
Cat Cafe	20
Outdoor Pods	24
Shelter Redesigned.....	25
Urban Center	25
Critical Program Components.....	26
Building Components	27
Site Selection	28
Rationale for Selection – Overall Site (Washington, D.C.).....	28
Rationale for Selection – Specific Site (U Street, Washington, D.C.).....	30
Submarket Background.....	35
Precedent Analysis.....	36
Architecture for Animals	37
Torre Argentina Cat Sanctuary, Rome, Italy	39
Animal Care Facilities	40
Chapter 4: Thesis Research Analysis.....	42
Measuring Success.....	42
Site Analysis	42

Site Documentation (Washington, D.C.)	42
Overall Site Documentation (U Street, Washington, D.C.)	47
History of Site	49
Site Analysis Diagrams	51
Problems and Opportunities	54
Zoning Considerations	54
Discussion of Program	59
Program Tabulation	59
Spatial Consideration Applications	61
Sustainability Considerations	63
Chapter 5: Design Approach	64
Thesis Design Goals	64
Discussion of Conceptual Design Strategies	64
Conceptual Overview	68
Poche/ Residual Space	73
Cat Cafe	78
Facade	79
Roof	82
Alternative Schematic Concept Analysis	83
Chapter 6: Conclusions	85
Summary of Critique Provided at B0	85
Summary of Critique Provided at B1	85
Summary of Critique Provided at B2	85
Summary of Critique Provided at B3	86
Summary of Critique Provided at B4	86
Summary of Critique Provided at B5	86
Summary of Critique Provided at B6	87
Appendices	88
Bibliography	89

List of Illustrations

Figure 1: Design Constituents.....	3
Figure 2: Timeline of Events relating to the use of cats including companionship, rodent control, education, and therapy.....	6
Figure 3: A brief list of a cat’s many unique attributes	7
Figure 4: Cat righting itself.....	8
Figure 5: The Predatory Pounce	9
Figure 6: Progression from walk to trot to gallop; highlighting legs in contact with ground and elongation of spine.....	9
Figure 7: Ear diagram	10
Figure 8: Hearing comparison between cats, dogs, humans	10
Figure 9: Socializing – other cats, humans, objects.....	11
Figure 10: Cat Attribute Diagram	13
Figure 11: Architects for Animals “Giving Shelter” designs, 2011 - present	16
Figure 12: MAO'er Hutong Project, Beijing.....	17
Figure 13: Washington Humane Society, Washington, D.C.	18
Figure 14: Cat Cafe.....	20
Figure 15: Existing Cat Café.....	23
Figure 16: Outdoor Pods.....	24
Figure 17: Shelter Redesigned	25
Figure 18: Cat Sanctuary/ Community Center.....	26
Figure 19: Animal Organizations in D.C.....	29
Figure 20: Sales Comparables – U Street vs. Georgetown Source: CoStar Group Inc, Transwestern	34
Figure 21: Dovecote, typical (1700s-1800s).....	37
Figure 22: Monkey-House, London Zoo – George Scharf (1829)	37
Figure 24: Torre Argentina Cat Sanctuary Aerial.....	38
Figure 24: Torre Argentina Cat Sanctuary Exterior	38
Figure 27: Torre Argentina Cat Sanctuary Ruins	39
Figure 27: Torre Argentina Cat Sanctuary Interior.....	39
Figure 27: Torre Argentina Cat Sanctuary Interior.....	39
Figure 28: Washington, D.C., Area Median Income (AMI).....	43
Figure 29: Washington, D.C., Metro Stations	44
Figure 30: Washington, D.C., Animal Hospitals	45
Figure 31: Washington, D.C., Animal Shelters	45
Figure 32: Washington, D.C., Public Schools	46
Figure 33: Washington, D.C., Pet Stores	46
Figure 34: Washington, D.C., Overall Mapping.....	47
Figure 35: U Street, Washington, D.C., Identification of Amenities.....	48
Figure 36: Surrounding Building Uses	49
Figure 37: Site Access	50
Figure 38: Site Dimensions.....	52
Figure 39: Parking Availability	53

Figure 40: Surrounding Building Heights.....	53
Figure 41: Housing around the Site	54
Figure 42: Housing Options - orange = apartments, condos; blue = single-family	55
Figure 43: Spatial Analysis Chart	62
Figure 44: Areas of Interrogation	65
Figure 45: Section Perspective.....	66
Figure 46: Human v. Cat Spaces.....	67
Figure 47: Building Program Distribution.....	67
Figure 48: Transverse Section Layers.....	68
Figure 49: Ground Floor Plan	69
Figure 50: Typical Office Floor	70
Figure 51: Main Stair	73
Figure 52: Cat Wall Section.....	74
Figure 53: Cat Wall Plan.....	74
Figure 54: Cat Wall Axon.....	75
Figure 55: Inside Cat Wall.....	76
Figure 56: Section through Cat Wall	77
Figure 57: Section through Main Stair.....	77
Figure 58: Cat Cafe Space	78
Figure 59: Cafe	79
Figure 60: 14th Street Elevation	80
Figure 61: East Elevation.....	81
Figure 62: West Elevation	81
Figure 63: Rooftop View	82
Figure 64: Roof Plan.....	83
Figure 65: Initial Concept Illustrations	84

Chapter 1: Introduction

Challenges Giving Rise to this Thesis

Scope

Although many cats are loved and well cared for by enthusiastic and compassionate owners, countless cats still suffer from human neglect and ignorance, leading to low adoption rates and high euthanasia numbers across the world. Approximately six to eight million cats and dogs enter shelters annually. Of all cats that enter shelters, 70 percent are euthanized. In addition to the millions of cats that reside in shelters, there is an entire population of stray and feral cats that is largely ignored. These free-roaming cats, if not trapped, neutered, and vaccinated, can continue to produce approximately three litters a year, each of somewhere between two and six kittens, and contribute to the already staggering population of cats looking for homes.

According to an ASPCA statistic, “for every person born in the U.S., 15 dogs and 45 cats are also born”.¹ In the United States there are an estimated 50 million stray or feral cats and 76 million pet cats. Of these pet cats, only about 30 percent come from shelters or rescue organizations.²

This thesis serves to identify, understand, and analyze the diverse roles cats play in the lives of humans, the health of our settlements, and general ecological well-being.

¹ ASPCA, Stray and Feral Cats, <http://www.asPCA.org/pet-care/virtual-pet-behaviorist/cat-behavior/stray-and-feral-cats>.

² Pets Fact Sheet, American Humane Society, <http://www.americanhumane.org/assets/pdfs/pets-fact-sheet.pdf>.

It is necessary to critically and creatively analyze the human relationship to cats throughout history, as well as how contemporary architecture and urbanism has and is continuing to do cats a disservice through an inattention to and neglect of their needs. The central question I will seek to address is: How can accommodations be designed to provide spaces that promote a happy and healthy environment for cats and for humans and enhance the relationship between humans and cats? It is my intention that the final design solution will have the ability to be translated to various sites and locations throughout the world.

One method which can decrease the free-roaming population by limiting reproduction is spaying and neutering. There is a program which is supported by the ASPCA as well as communities across the country called TNR (Trap-Neuter-Return). Following these procedures and taking steps to have all animals spayed or neutered is critical. However, this feat cannot be achieved through any architectural intervention alone. Although cats were originally domesticated thousands of years ago and some species still remain wild, cats and humans have a mutual dependence on one another for comfort, tenderness, and care. Cats can and do serve a human need. What are these needs and how can architecture be designed to enhance the relationship between humans and cats? This answer, as well as analyzing the unique attributes and needs of cats, will comprise the design criteria for my thesis.

Definitions

In order to understand and discuss the merits of this thesis, a few terms must be clarified. According to the ASPCA, “*Feral cats* are free-roaming domestic cats who were never socialized by humans or have lived outdoors for so long that they have reverted to a wild state... *Free-roaming* cat populations generally consist of a mixture

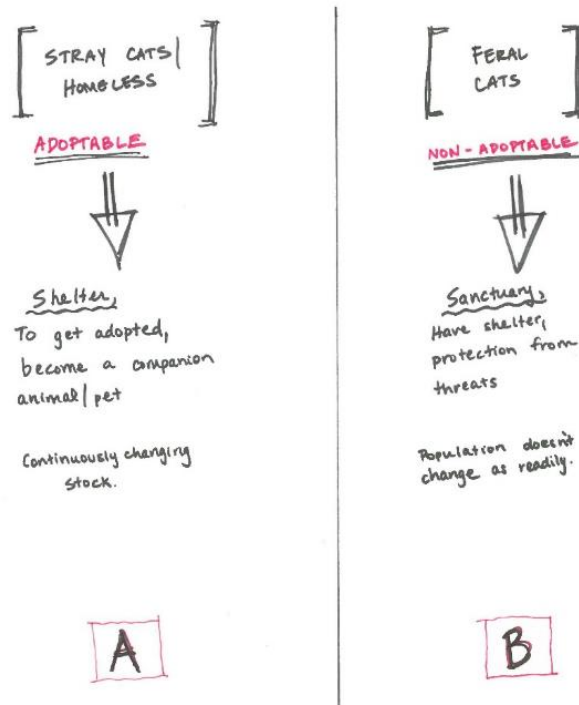


Figure 1: Design Constituents

of truly feral cats, semi-socialized cats and lost and abandoned pets.”³

For the purposes of this thesis, we will be focusing on serving the stray cat population, which is a combination of semi-domesticated or lost and abandoned pets (see Figure 1).

Key Considerations

The study of this topic brings up the consideration of areas beyond architecture and urbanism. The main goal for this thesis will be to design spaces that enhance the lives of humans and cats simultaneously. A secondary objective, which initially was to deliver a practical solution to the overpopulation of free-roaming cats in the

³ ASPCA, Position Statement on Feral Cat Management, <http://www.aspc.org/about-us/aspc-policy-and-position-statements/position-statement-on-feral-cat-management>.

environment, has been set aside since TNR practices are the most effective at addressing this. I plan to address the thesis while keeping in mind four overarching considerations: social, economic, and amplification of benefits.

Social Considerations

An evaluation of social considerations in our society may awaken us to a need to address this issue as well. Why does animal neglect exist and why has this concern been disregarded by some of our society? What relationship do society and communities have to the welfare of cats? Another social component is how the needs of cats overlap with humans in play, socializing, and tenderness and comfort. This thesis will look to the relationship between humans and animals as a guide. There is a way to instill a sense of social awareness among humans for the neglect of all types of pets which exists in today's society.

Economic Considerations

Many animal shelters struggle with obtaining the necessary funds to maintain the space and care for the animals in a way that is humane and considerate to all involved. They often rely on donations from generous individuals or groups. As a result, many shelters are at capacity and do not have the means to optimally care for the animals. I believe there is a way to make this architectural or urban intervention self-sustaining and more financially feasible to allow it to effectively consider the needs of the animals inhabiting the spaces, as well as the individuals looking to find and adopt animal companions.

When identifying programmatic components for this thesis, I will consider what new economic sources can be identified and used in creating spaces that build off of the human need for animals. My thesis will look to create innovative solutions based on a critique of existing structures and programs.

Amplification of Benefits

To counteract negative opinions of these animals, it will be helpful to underscore the merits of cats residing in certain areas, which my thesis explores. For example, cats operate mostly at night so if they are out hunting at this time, it may limit the perceived negative impact of cats roaming freely.

Cats have been utilized for thousands of years to keep the rodent population under control. In fact, when cats were first domesticated over five thousand years ago in the Fertile Crescent (present day Egypt), they were taken into food stores to hunt rodents and protect the store's contents from undesirable vermin. There are many instances where cats are still utilized in a similar way today (see Figure 2). For example, since about the 1960s, feral cats are kept and fed on the grounds of Disneyland and their primary duty is to hunt rodents at night. It is estimated that approximately 200 cats roam the grounds of Disneyland and California Adventure Park.⁴

Cats have a variety of benefits besides their use as companion animals. Figure 2 shows a glimpse of their association with humans and their uses in rodent control, education, and therapy. Cats are able to form bonds with humans and provide tenderness, care, and love, despite any flaws that may be present. For example, there

⁴ Alley Cat Allies, TNR at Work – Disneyland Finds Balance with Feral Cats, <http://www.alleycat.org/page.aspx?pid=873>.

are many examples where the elderly or veterans have adopted cats and now experience an increase in health and morale.⁵

In addition, research has shown that children who grow up or have experience with pets learn healthier relationship skills, are more responsible, and develop stronger immune systems, which contributes to a lower likelihood of respiratory infections.⁶

Pets are something that should and can be experienced by the whole population.

Having the opportunity to educate humans about the benefits of animals is fundamental to our society.

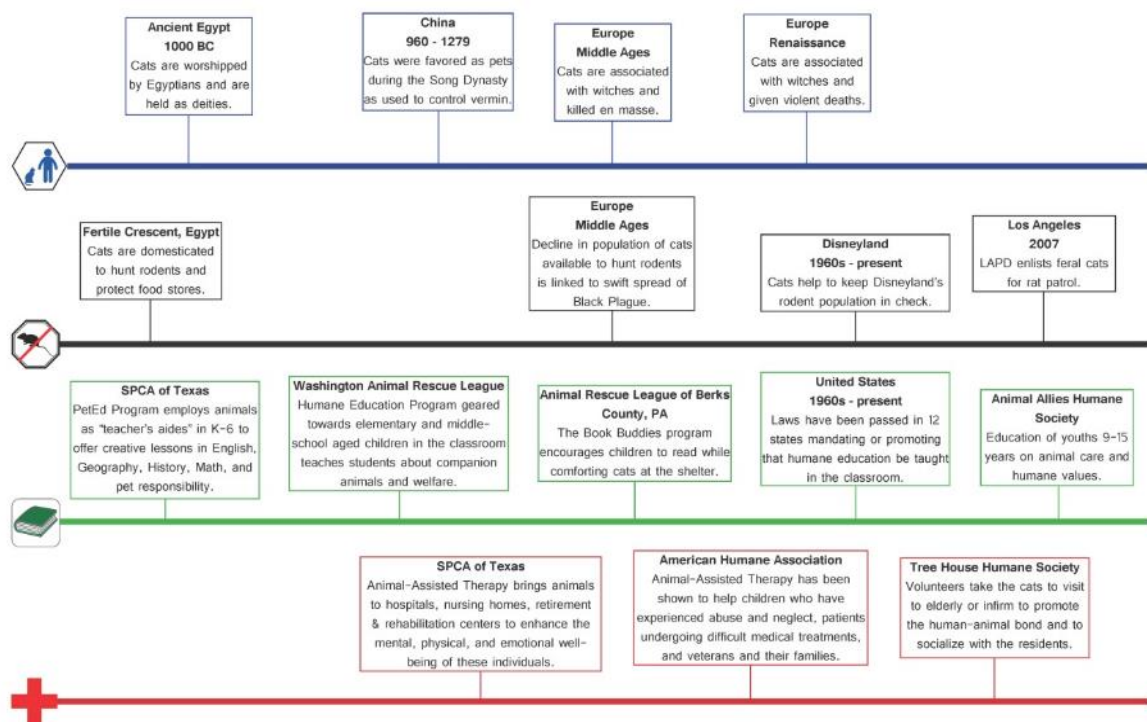


Figure 2: Timeline of Events relating to the use of cats including companionship, rodent control, education, and therapy

⁵ Best Friends Animals Society – Utah, Together We Can See the World. August 21, 2014, <http://lovemeow.com/2014/08/together-can-see-world/>.

⁶ Alice Park, Study: Why dogs and cats make babies healthier, *Time*, <http://healthland.time.com/2012/07/09/study-why-dogs-and-cats-make-babies-healthier/>.

Chapter 2: Thesis Topic Research

Understanding the Subject

Design must first come from an understanding of the subject. Why do cats like certain things? Where does this come from? Defining the set of skills, abilities, and ecology of cats will help us understand how they think, move, and use spaces.

The cat is a tool that can be used to think about spaces in architecture. Analyzing their attributes and qualities provides a lens through which to understand architectural spaces. Below is an elaboration of some of the unique characteristics of cats that help to distinguish them from other animals.

A cat's senses operate as a complete system.

Although this document will only elaborate on a few attributes (balance, hunting, hearing, socializing), there is an extensive list of characteristics which also contribute to a cat's unique position in the environment (see Figure 3).

Balance

Two components which are responsible for a cat's balance are the vestibular apparatus and the tail.



Figure 3: A brief list of a cat's many unique attributes

“The vestibular apparatus is made up of three fluid-filled semicircular canals that are lined with cilia and positioned at approximately right angles to each other. The cat’s special ability to balance is a result of the positioning of the three semicircular canals in its vestibular apparatus and the precise alignment of one of the canals with the cat’s head carriage. ⁷”

A cat’s tail provides balance when tree climbing and acts as a counterweight when changing direction suddenly⁸. The cat’s vestibular apparatus and tail contribute to its ability to right itself when falling (Figure 4).

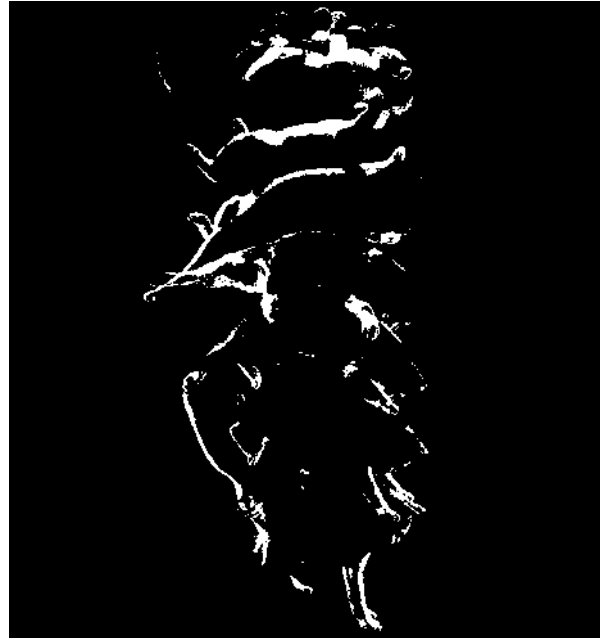


Figure 4: Cat righting itself

Balance also comes into play when a cat progresses from a walk to a trot to a gallop (Figure 6). Its spine remains relatively level, with little up and down and side-to-side movement, to move as efficiently as possible. Linda P. Case explains movement as “a series of controlled falls... gaits of the cat are nothing more than a result of upsetting the center of balance and then changing position to bring it back under control. ⁹”

⁷ Linda P. Case, The Cat: Its behavior, nutrition & health (Ames: Iowa State Press, 2003), 41.

⁸ Roger Tabor, Understanding Cat Behavior (Cincinnati: David & Charles, 2003), 16.

⁹ Case 40.

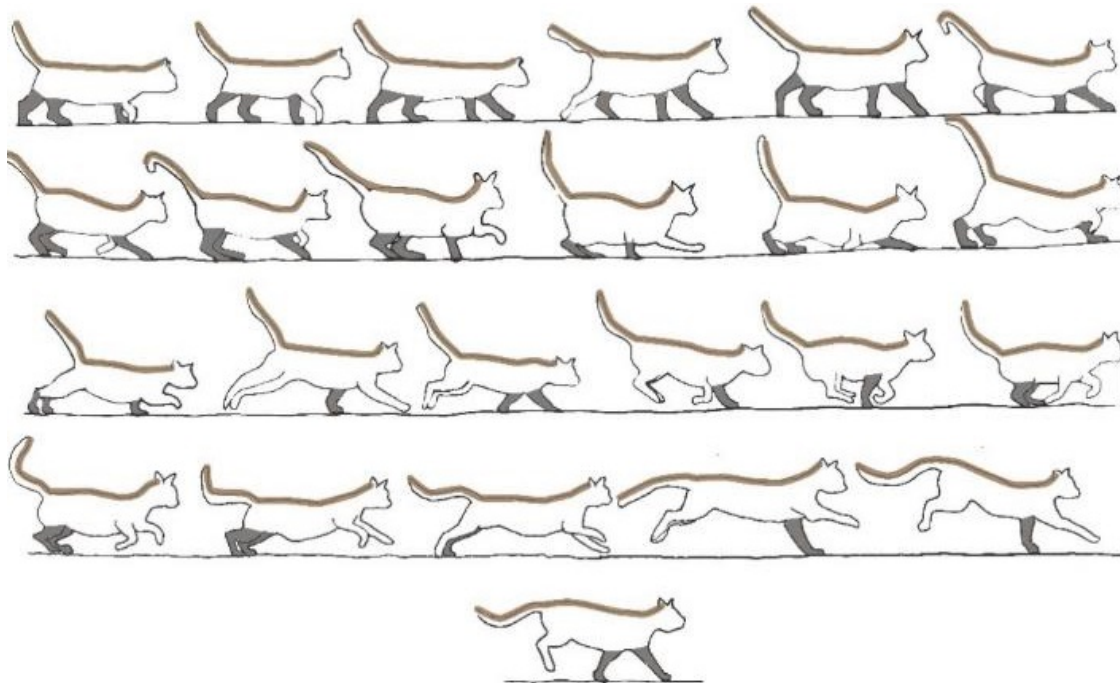


Figure 6: Progression from walk to trot to gallop; highlighting legs in contact with ground and elongation of spine

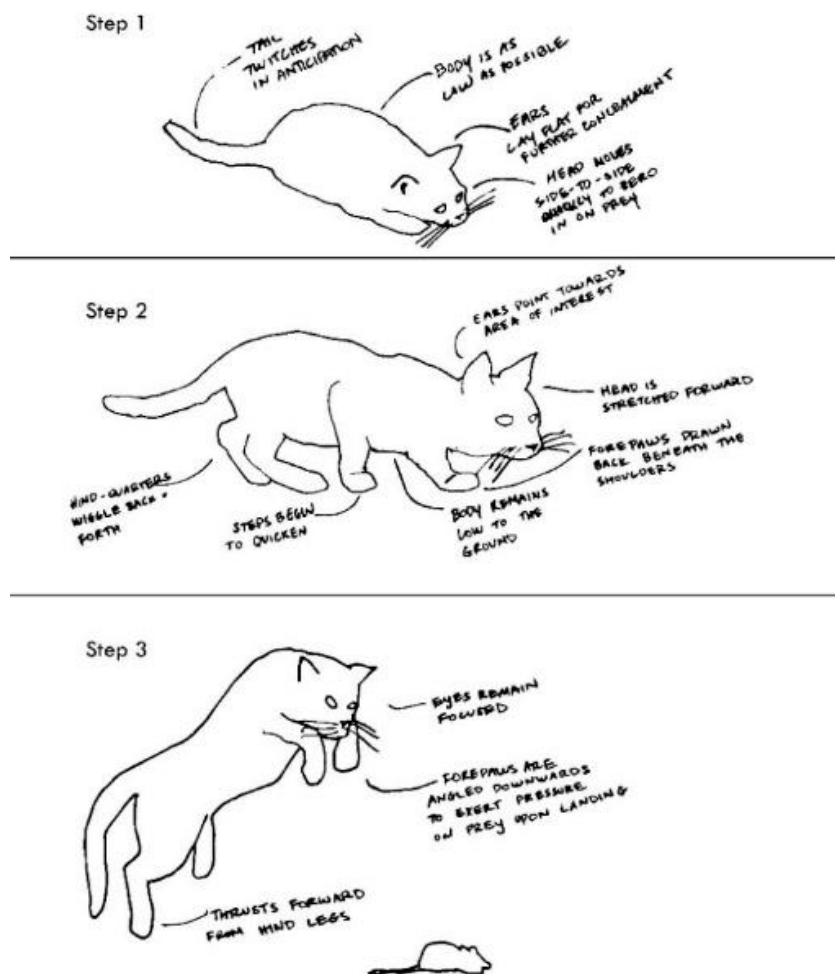


Figure 5: The Predatory Pounce

Hunting

Cats rely on hunting to find food for survival. Although cats have been domesticated for thousands of years, they are all hunters at heart. Cats are only considered half-domesticated compared to dogs. This is because cats can revert to a wild state if needed. In an effort to survive they can find food for themselves and survive in outdoor conditions independent of human care. Dogs, on the other hand, rely on humans for care, food, and shelter.

Cats primarily hunt small prey such as rodents and birds. Customarily cats enjoy the thrill of the chase and will often play with their prey, releasing it and recapturing it. Sometimes they may even get bored and release the animal altogether.

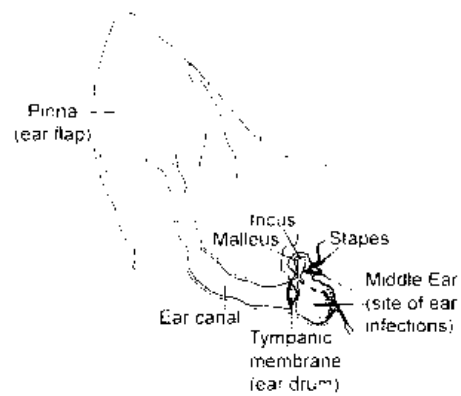


Figure 7: Ear diagram

They are extremely stealthy and their ability to reach high speeds quickly is another asset. They are attracted by any movement away from them. Much of what they do when playing with other cats or humans is in preparation for trapping real prey; they use a number of tactics to do so. Figure 5 is an example of the predatory pounce.

Hearing

Cats can hear at much higher frequencies than humans and even dogs (Figure 8). This allows them to detect any

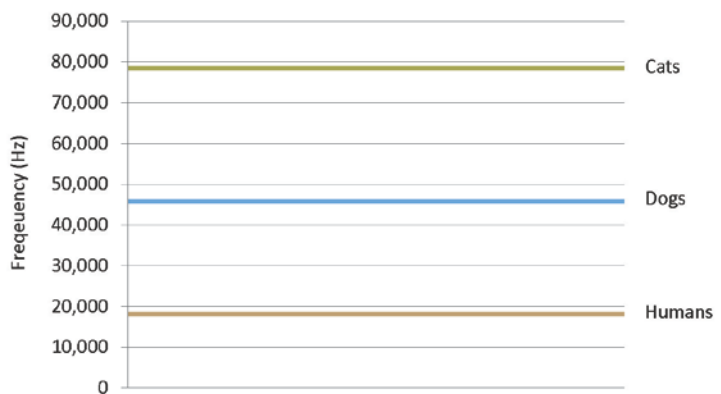


Figure 8: Hearing comparison between cats, dogs, humans

movement by small prey while hunting. Their outer ears (pinna) are separated by a broad skull and as a result, have the ability to rotate independently from one another in an arc of approximately 180 degrees¹⁰. This allows a cat to use its ears similar to radar detectors to pinpoint the source of a sound.

Another component that aids in a cat's hearing is the ridges inside the ear (Figure 7).

When sound enters a cat's pinna, it is directed downwards toward the eardrum, bouncing off the ridges, enabling the cat to identify more specific characteristics of the sound, such as vibrations and intensity¹¹.

Socializing

Cats socialize with one another and with humans through play and scent communication (Figure 9). Case writes, "Most cats initiate contact with humans as a form of greeting, at feeding time, as a request to go outside or to play, or as an invitation for petting and cuddling. The behavior patterns that cats show in all of these situations are the same that they

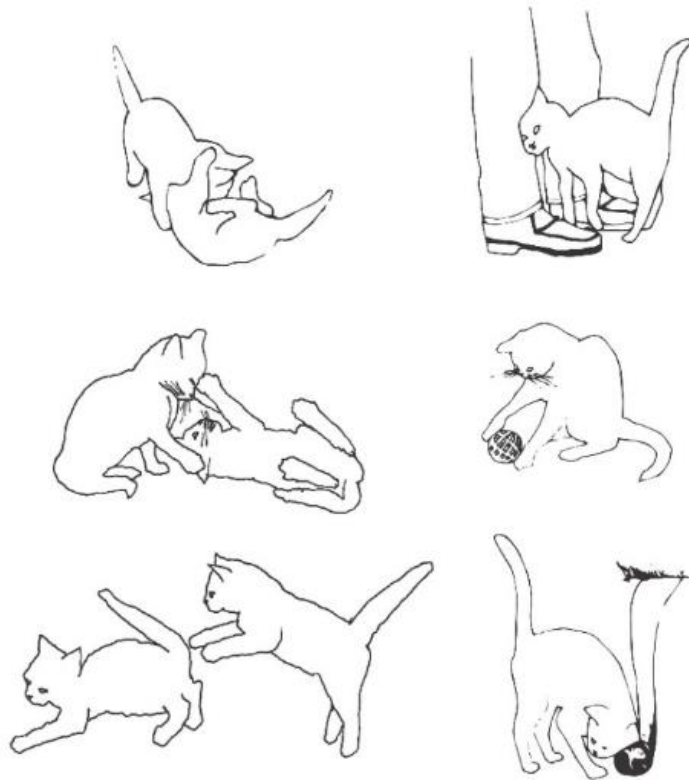


Figure 9: Socializing – other cats, humans, objects

¹⁰ Roger A. Caras, A Cat is Watching (New York: Simon and Schuster, 1989), 47.

¹¹ Caras 47-48.

use when greeting or initiating play with other cats.^{12,}

Spatial Relationships

Now that a few of a cat's characteristics have been discussed, we should start to think about what role these attributes play in the design of space. For example, what makes a cat 'a cat' and how can these characteristics carry forward into spaces that are designed specifically for accommodating cats?

When considering balance, there should be the potential for the careful movement among and between objects. An advantageous location from which to observe and then attack would be necessary to integrate the need for hunting. A cat's hearing can be uniquely adapted to understanding materials and drawing associations based on their use and purpose. And finally, socializing would require the use of the environment in a unique way to communicate relationships between humans and other cats (Figure 9).

Please see Figure 10 for a more complete diagram of a cat's attributes.

¹² Case 100.

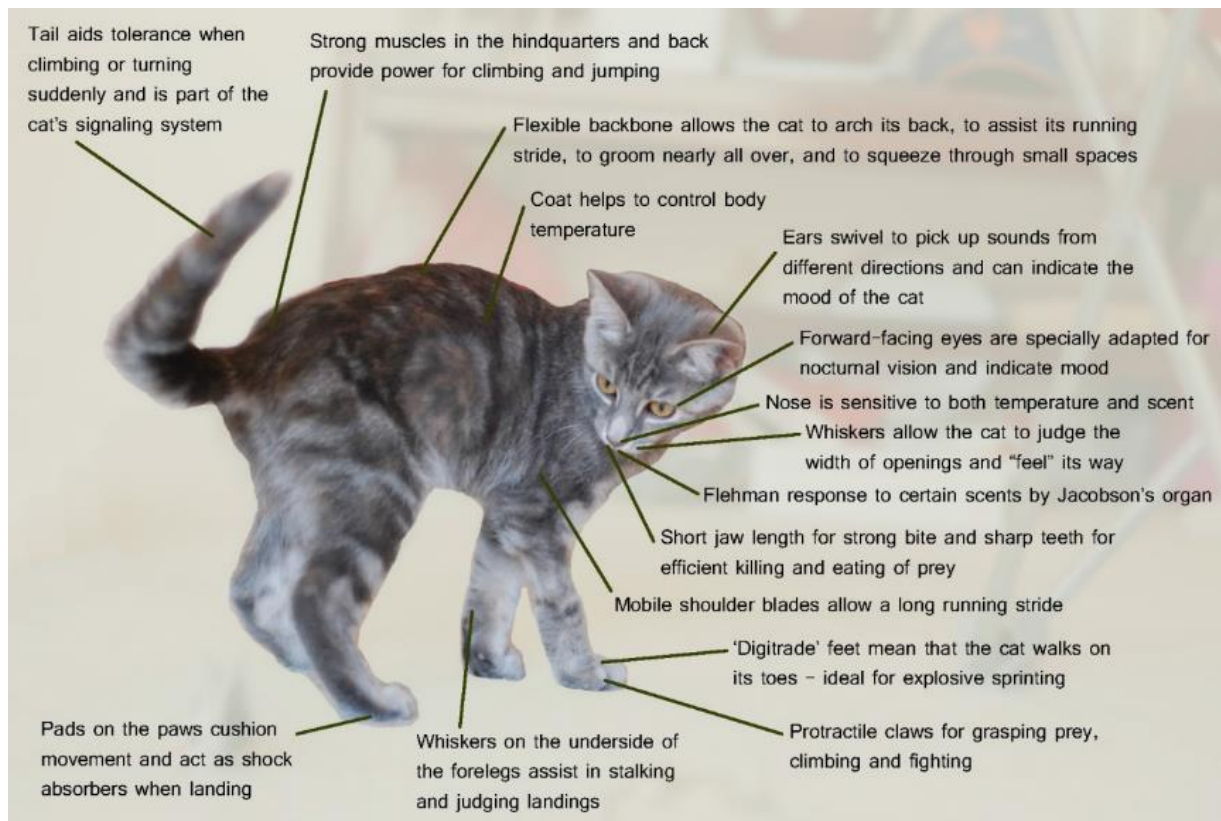


Figure 10: Cat Attribute Diagram

Cats through History

Cats were originally domesticated in ancient Egypt. They were brought into stores to eliminate rodents, and in return were given a source of food and shelter. These cats were highly praised in Egyptian culture, and were considered akin to gods. In the Middle Ages in the mid-1300s there was a dramatic change, as cats were associated with witchcraft and killed en masse. It is believed that the death of cats during this period is one of the reasons the Bubonic Plague spread so quickly and with such catastrophic results. There were not enough cats to keep the rodent population under control, and so the disease spread much more quickly and affected millions of people.

The opinion of cats varies in modern cultures. For example, in Japan cats are considered a source of good luck. There have also been cats depicted in folklore and figures of speech. It is worthwhile to consider these phrases and their bearing on how humans view these animals. Katharine Rogers, in her book, The Cat and the Human Imagination, alludes to cats from several points of view. There is an opinion of cats as hunters with cruel methods. The term “*feline* connotes stealth and... to *play cat and mouse with* is to toy heartlessly with a victim in one’s power.”¹³

On the other hand, there is the perception of a cat as fortunate and superior, illustrated by phrases such as, “*the cat’s meow*, or *the cat’s pajamas*.”¹⁴ Although cats were seen as valuable in controlling the mice population and were worshipped as deities thousands of years ago, only in the eighteenth century did cats become recognized as valuable household companions. Finally, in the nineteenth century cats began to appear as important characters in works of fiction.¹⁵

¹³ Katharine M. Rogers, The Cat and the Human Imagination: Feline images from Bast to Garfield (Ann Arbor: University of Michigan Press, 1997), 1.

¹⁴ Rogers 2.

¹⁵ Rogers 5.

Chapter 3: Program & Site Research Data

Identification of Urban Issues

As mentioned in the introduction, free-roaming cats are a combination of stray or semi-domesticated animals, and ferals, which are completely unsocialized. Although this thesis is focusing on architectural and urban interventions for stray cats, it is important to understand the issues that plague the free-roaming cat population as a whole. Oftentimes, stray cats are those who have been abandoned by their owners for one reason or another. In some cases, these animals have not been spayed or neutered, so they continue to reproduce, producing several litters a year. The kittens that are born, if left to grow up in the wild, will also become feral since they will not be socialized to humans.¹⁶

Aside from the fact that these animals will continue to reproduce unless trapped and brought to a veterinary center to be sterilized, there is also a harsh environment that the animals are subjected to. For one thing, food sources may not be readily available so the cats will need to hunt or scavenge for their food. Secondly, the weather can play a major role especially in harsh climates. In many areas, especially urban, cats are prone to being hit by cars since they are not taught how to cross the roads and must learn through experience, in which case they often do not have a chance to learn. A fourth source of death for these animals is disease. Since they do not have

¹⁶ ASPCA, Stray and Feral Cats, <http://www.asPCA.org/pet-care/virtual-pet-behaviorist/cat-behavior/stray-and-feral-cats>.

the proper medical care, they are at risk for acquiring diseases from other animals such as feline leukemia or feline immunodeficiency virus, which can be deadly.¹⁷

Recent Global Awareness

The issues related to this free-roaming cat population have begun to be considered as a global issue. *Architects for Animals* “*Giving Shelter*” is a fundraising and awareness initiative that has been held in various cities over the past several years. The oldest of these has been held in New York City annually since 2011 and is organized by the *NYC Feral Cat Initiative* and the *Mayor’s Alliance for NYC’s Animals*. There is a similar event in Washington, D.C. run by the *Washington Humane Society* and the *American Institute of Architects* (AIA). Most recently, in September 2014, there was an *Architects for Animals* “*Giving Shelter*” initiative in Los Angeles where fourteen architecture offices were commissioned by *FixNation* to

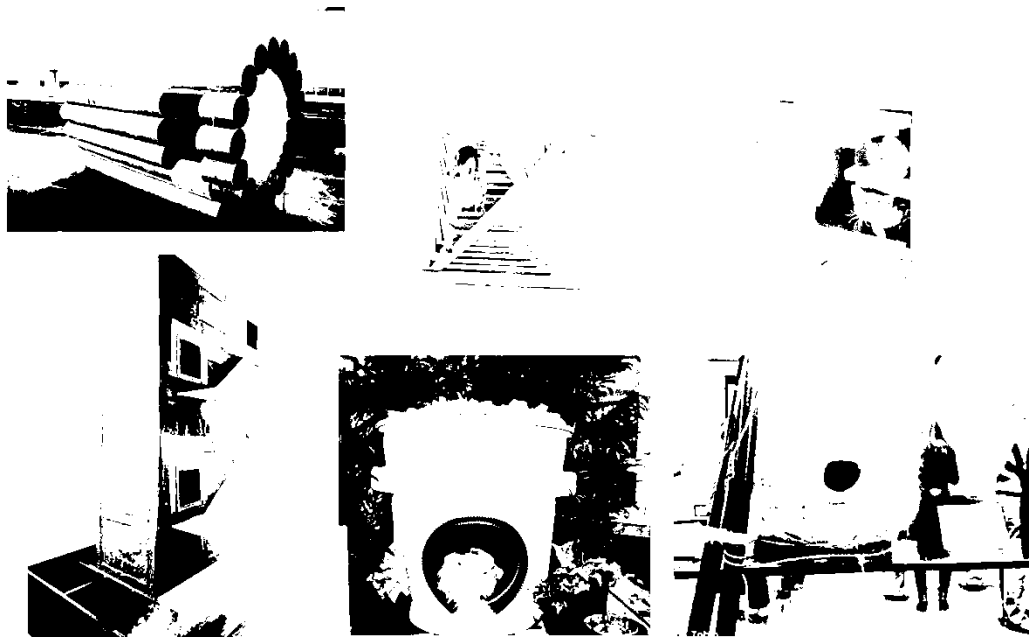


Figure 11: *Architects for Animals* “*Giving Shelter*” designs, 2011 - present

¹⁷ ASPCA, Feral Cats FAQ, <http://www.asPCA.org/adopt/feral-cats-faq>.

each design a cat shelter. The shelters produced for the events in New York City and Washington, D.C. were also placed in existing cat colonies around the city. Figure 11 is a sampling of these outdoor cat shelters.

As part of Beijing Design Week 2014, the *MAO'er Hutong Project* was developed by Okamoto Deguchi Design (ODD). The project serves to enhance the living quality of cats through the installation of quarter-cylindrical boxes along the roofs of traditional hutongs in Beijing (Figure 12). The design creates a community space for the felines who are an important part of the local culture.

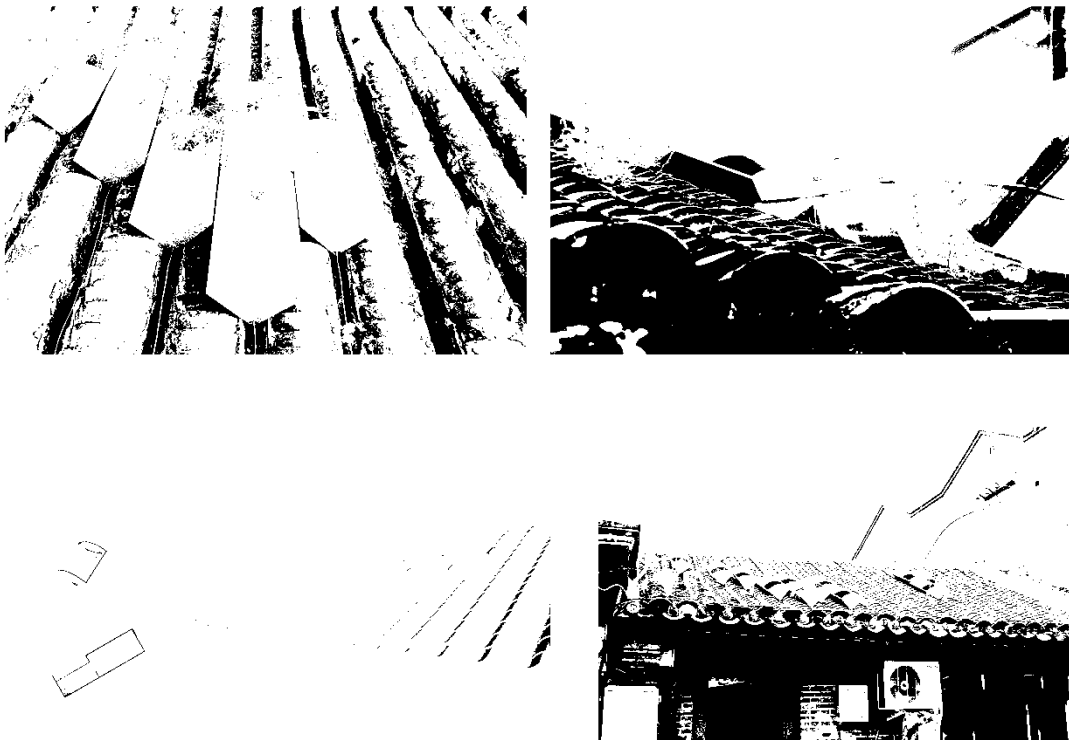


Figure 12: MAO'er Hutong Project, Beijing

Design Problem Identification

A major issue that also exists relates to the design of contemporary architecture and urbanism and demonstrates an inattention to and neglect of animal needs. Many existing animal shelters are unpleasant for both the animals and the humans visiting for purposes of finding a pet to adopt. Although these facilities have intentions which include providing a safe and healthy environment for the animals held there, this is not always possible due to inadequate funds. As a result, many locations fall into disrepair, take in many animals, and aren't able to get them adopted as quickly as they would like.

Some inherent problems with typical animal shelters are that there is not always a place to play with the animals. For the majority of the day, they are in small cages, unable to exercise and play, and so they become used to this isolation and inactivity (Figure 13). This leads to low morale so when people come in to find a pet, they are not able to experience the true personalities of these animals.



Figure 13: Washington Humane Society, Washington, D.C.

Program Selection

This thesis aims to integrate a number of different goals as well as program feasibility and viability. For my main intervention, I will pursue the design of a cat café as a basis for the design direction. The cat café allows for an added bonus in that it may be extremely beneficial in helping humans find new companions they may wish to adopt and take home with them. This type of facility opens up the opportunity for several different sources of revenue, which will help to maintain the care of the cats as well as the initial construction of the building. The feasibility of this project is key and actually led to the development of a mixed-use project to better fit into the context and to satisfy income-producing ability. The building is called the Feline Human Ecosystem.

Below the Program Selection Rationale is a brief initial analysis of four programmatic solutions which were considered as final thesis interventions. Ultimately, one was selected to carry forward but was adjusted slightly to take into consideration a higher level of financial feasibility, as well as to better suit the site selection. All major decisions relating to this thesis were carefully considered from the standpoint of financing the project, marketing the building, and ensuring continued operational abilities over the term of the asset.

Building Type Selection Rationale

Selecting a cat café as the primary intervention in my thesis serves my goal of having a space for humans and animals to interact and provide a mutual benefit to one another, while also serving as education of the neglect of cats that occurs in our society and how we can better understand these unique animals. In order to fulfill my

goals of providing animals to a more under-served population, it is necessary to allow this building to function in other ways. For example, locating the building in the U Street neighborhood in Washington, D.C. makes it accessible by public transportation in addition to making it available to a more affluent and younger demographic, which could allow for the café to thrive economically and for animals and humans to build deeper relationships. To incorporate the benefit of cats as companion animals, it may be useful to include space in the building for field trips, birthday parties or educational programs.

The building will be a total for four stories, plus amenity space on the roof. The ground floor can be thought of as the retail space which includes the “cat café” space. The upper three stories will be office space, but the entire building will be integrated with this idea of facilitating and providing for the interaction of humans and cats.

Cat Cafe

The Cat Café allows for the interaction of humans and cats, and provides shelter and care for them (Figure 14). A cat café is a themed cafe with cats that can be watched and played with. Oftentimes, the animals are up for adoption. Visitors will also usually pay a cover fee, so it is a form of supervised indoor pet rental. These cafes also fill a need since many city dwellers

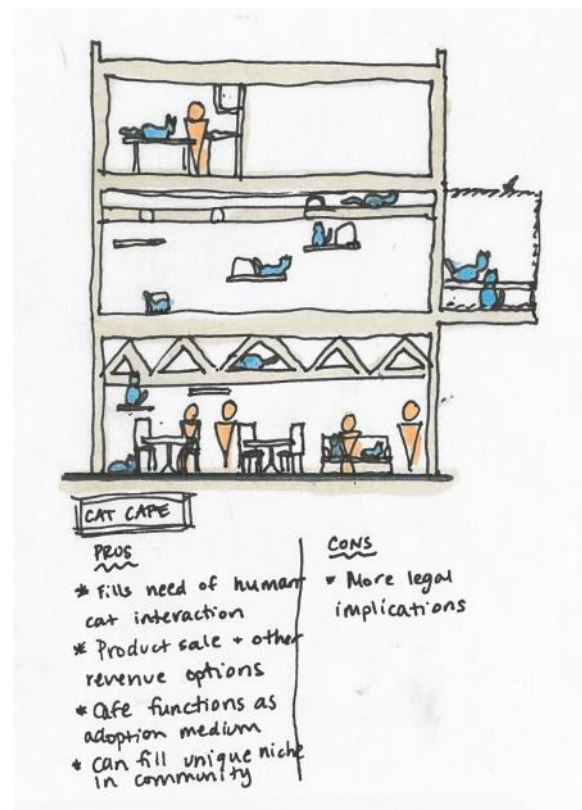
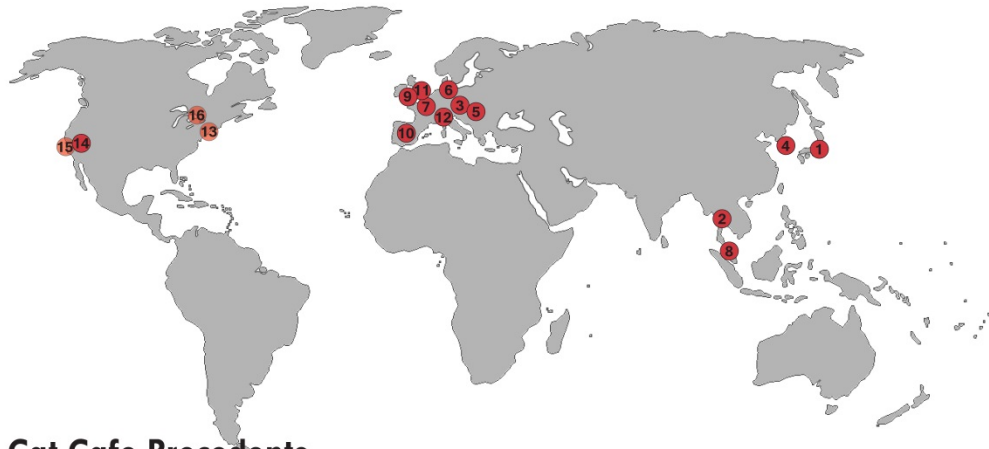


Figure 14: Cat Cafe

may not be able to or may not want to keep pets in their apartments. If the cafe was located in an affluent neighborhood, it could fill a unique niche in the community. The idea of a cat café began in Taiwan in 1998. However, over 100 cafes have been opened in Japan over the past ten years and they have since spread to other countries around the world. The Japanese have traditionally believed that cats are sacred animals, which explains the popularity and rapid spread of this program type to begin with. Today there are over two dozen across the world located in Japan, South Korea, Hungary, France, England, Spain, Italy, and other countries. Please refer to Figure 15 for a partial list of these cafes and their specific characteristics, organized by date opened. A few of these cafes have also incorporated grooming services, boarding facilities, and therapy and educational programs, which all present opportunities to bring in revenue.

North America's first cat café opened from April 24-27, 2014 in New York City. However, it was only a temporary pop-up café, hosted by Purine ONE, and encouraged visitors to learn about cat health and well-being and adoption. The main feature of the café was the 16 adoptable cats that were provided in partnership with North Shore Animal League, the largest no-kill rescue and adoption organization in the world. These cats interacted with the visitors and visiting this café was extremely popular during the short time period it was open. There are two other cafés in the United States slated to open in California later in 2014, as seen in numbers 14 and 15 on the map (Figure 15). In fact, the first cat café in the United States opened in Oakland, California in October 2014 (number 14 in the chart).

To make this facility appealing to a larger population, there is an opportunity to bifurcate the various uses in the building. For example, the area containing the cats would be separated from the area where food and beverages are sold. This must also be done to conform to health code regulations. This could provide an opportunity for parents who wish to bring their children to the facility to relax in the Starbucks type environment, while still remaining visually connected to their children interacting with the animals. There would also be a separate area where the pet products would be sold. This would allow those with different types of pets to easily service their needs without necessarily having to interact with the cats.



Cat Cafe Precedents

No.	Name	Form	Location	Philosophy	Date Opened	Details
1	Cat Cafe Nekorobi		Tokyo, Japan 1 Chome28-1, Higashikabukuro Toshima-ku, Tokyo	COMPANIONSHIP	2008	<ul style="list-style-type: none"> \$10 cover charge for 1 hour No reservations accepted Beverages from vending machine
2	Purr Cat Cafe Club		Bangkok, Thailand Sai Sukhumvit 53 Sukhumvit Road Bangkok, Thailand 10110	COMPANIONSHIP CAFE	2012	<ul style="list-style-type: none"> Wellness and grooming services Can bring your own house cat Provide facilities for temporary or overnight stays
3	Cafe Neko		Vienna, Austria Blumenstockgasse 5 1010 Vienna, Austria	COMPANIONSHIP	May, 2012	<ul style="list-style-type: none"> Vienna's first cat cafe Houses 5 shelter cats Provide companionship to those who cannot have pets for various reasons
4	Godabang Cat Cafe		Seoul, South Korea 162-14 Donggyo-dong, Mapo-gu, Seoul	COMPANIONSHIP CAFE	??	<ul style="list-style-type: none"> \$8 cover charge, no time limit Beverages only
5	Cat Cafe Budapest		Budapest, Hungary 1065 Budapest, VI. kerület, Révay utca 3, Hungary	CAFE	February, 2013	<ul style="list-style-type: none"> Has 13 cats
6	Pee Pees Katzencafe		Berlin, Germany Thomassstr. 53, 12053 Berlin, Germany	CAFE COMPANIONSHIP	August, 2013	<ul style="list-style-type: none"> Holds small exhibitions, readings, gentle acoustic concerts
7	Le Cafe des Chats		Paris, France 16 rue Michel Le Comte, 75003 Paris	CAFE	September, 2013	<ul style="list-style-type: none"> Reservations recommended 10 friendly cats from the SPA Cats are not adoptable
8	Purrfect Cat Cafe		Penang, Malaysia 53, Jalan Muntri, Georgetown, 10200 Penang, Malaysia	COMPANIONSHIP CAFE	October, 2013	<ul style="list-style-type: none"> \$6 cover charge for 2 hours Separate areas for cafe and "cat common area"
9	Totnes Cats Cafe		Devon, England 51c Fore St, Totnes, Devon TQ9 5NJ, United Kingdom	COMPANIONSHIP THERAPY	2013	<ul style="list-style-type: none"> First cat cafe in UK Non-profit organization Cats do not remain overnight
10	La Gatoteca		Madrid, Spain Calle Argumosa, 28, 28012 Madrid, Spain	ADOPTION EDUCATION THERAPY	2013	<ul style="list-style-type: none"> Non-profit organization Physical shelter of NGO Shelter (Charitable Association for the Rescue and Adoption of Cats) Education and awareness programs including pet therapy, cat care workshops, ethology courses, consultation \$8 donation for 1 hour
11	Lady Dinah's Cat Emporium		London, England 152-154 Bethnal Green Rd., Shoreditch, London	CAFE	March, 2014	<ul style="list-style-type: none"> London's first cat cafe \$8 cover charge for 2 hours Reservations required Products for sale online
12	Neko Cafe		Torino, Italy Via Napione, 33 Torino, Italy	CAFE ADOPTION DONATIONS	April, 2014	<ul style="list-style-type: none"> First cat cafe in Italy Takes care of 7 adopted cats Requests donations for welfare of cat colony
13	Cat Cafe		Manhattan, NY 168 Bowery, New York, NY	EDUCATION ADOPTION	April 24-27, 2014	<ul style="list-style-type: none"> North America's first cat cafe Pop-up cafe hosted by Purina ONE Learn about cat health and well-being and adoption 16 cats available, partnership with North Shore Animal League
14	Cat Town Cafe		Oakland, CA	ADOPTION	October, 2014	<ul style="list-style-type: none"> First cat cafe in the United States Free to enter the cafe but with set time limits Primarily will serve to match cats and visitors to facilitate adoptions
15	KitTea		San Francisco, CA	ADOPTION	Anticipated, Summer 2014	<ul style="list-style-type: none"> Zen retreat where people and cats can hang out to the benefit of both To provide an oasis where rescued kitties can live and be adopted Approx. 1,600 sf with 30-35 people in the lounge at a time Reservation system
16	Kitty Cat Cafe		Toronto, Canada	ADOPTION	Planning in Progress	<ul style="list-style-type: none"> Focused on adoption of "misfit" cats Educational programs on behavior and nutrition Litterature nights hosted through Animal Hospital where kids can read books to cats Separate cafe and cat common area

Figure 15: Existing Cat Café

Outdoor Pods

Cats often survive on the periphery of the human population – in residual spaces.

They are drawn to areas with food sources, such as rodents or trash. One choice for an intervention would be to place outdoor pods throughout an area within a city, in whatever residual spaces can be found (Figure 16).

The benefits for this type of intervention include the fact that the pods would be relatively fast, simple, and inexpensive to produce. They could also be easily moved to different locations. Unfortunately, they can only hold a few cats at a time and there would still be a reliance on people to provide food and water. Since they are temporary, the cats using these pods would not be continuously protected from disease, cars, or other animals.

Nonetheless, these pods could be suitable for feral cats who are unable to be adopted and who will continue to live outdoors under the supervision of a dedicated caretaker.

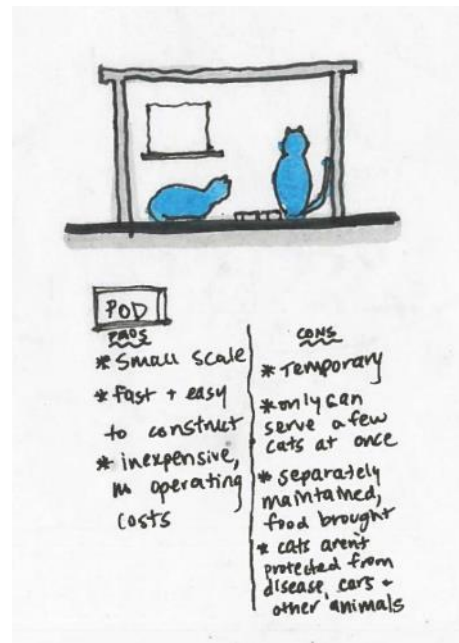


Figure 16: Outdoor Pods

After further development of this thesis, it was determined that although these outdoor cat shelters are a useful addition to urban environments, must be carefully considered, and play a large role in the well-being of the free-roaming cat population, this means of social consideration is already in the public eye. As a result, this type of intervention was set aside as a primary consideration for this thesis.

Shelter Redesigned

A shelter is a step up from the outdoor pods in terms of size and accommodation potential (Figure 17). A shelter is also run by an entity that provides food and medical care, unlike in the pods where the animals are still mostly on their own.

Traditionally, shelters only hold animals which have the potential to be adopted. This eliminates

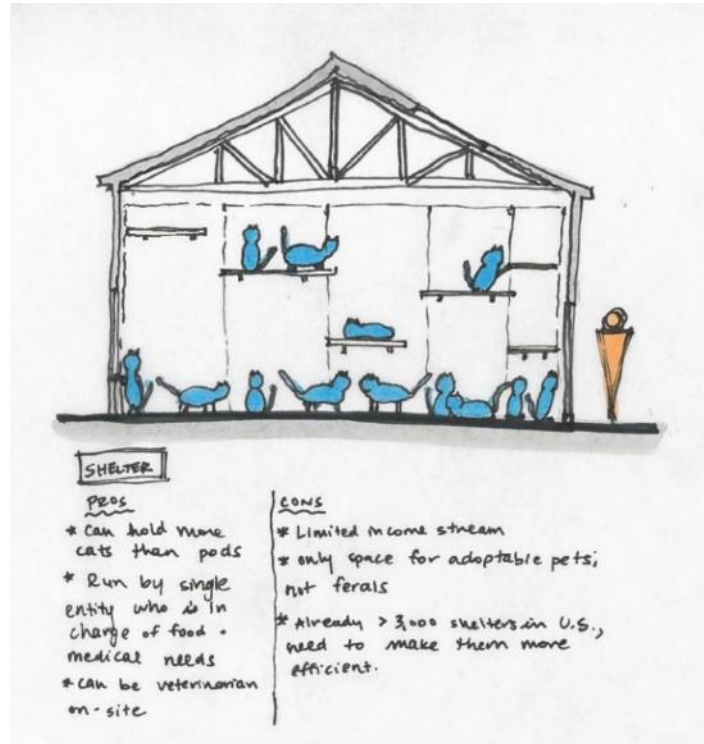


Figure 17: Shelter Redesigned

feral cats as being considered for accommodations here. Currently, when a feral cat is brought to a shelter is it is euthanized. Another issue animal shelters have is limited funding, which the application of a cat café looks to address.

When I say that this is a “shelter redesigned”, what I mean is that contrary to existing animal shelters, there would be adequate space for the animals to exercise, play, and meet potential owners, so they would be happy and healthy. It is crucial to adopt an animal based on their personality and the best way to determine an animal’s personality is to interact with it in an open and comfortable environment.

Urban Center

I envision this intervention as containing program spaces for both humans and animals (Figure 18). Perhaps it could be a community center and a cat sanctuary.

Since we understand that humans have a need for companion animals, how can we build on this concept and provide space for the interaction of humans and cats?

Combining different types of uses in one building generates the potential for multiple income sources. The downside of this type of building is that it will need to be larger, and therefore will be more expensive in terms of construction and maintenance. Because of its size, and depending where it is located, there may be certain legal limits to its placement and expansion.

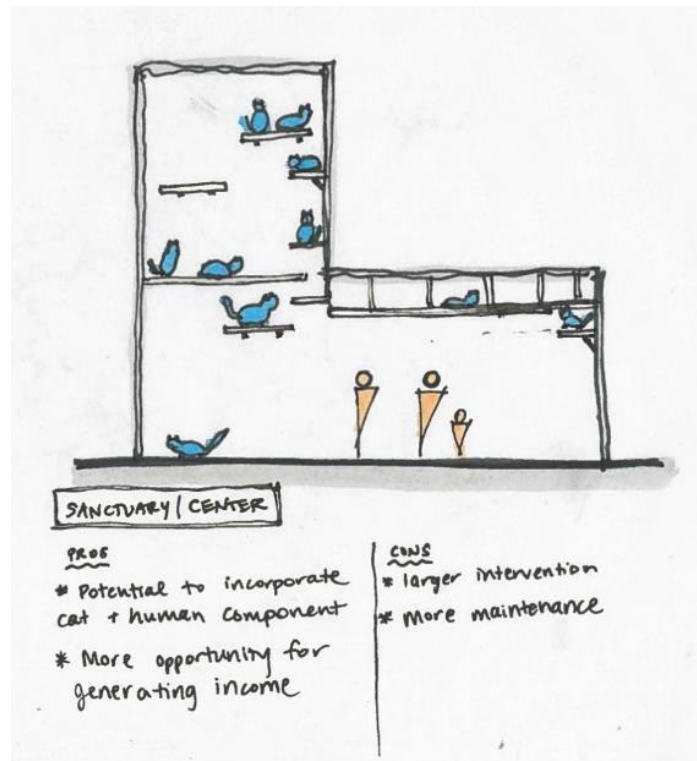


Figure 18: Cat Sanctuary/ Community Center

Critical Program Components

My goal is to choose a program that best combines my broader intentions of how animals and humans can optimally serve one another, while providing something that is suitable based on a financial feasibility analysis. Therefore, it is necessary to allow this building to function in other ways, besides just a café that has cats. There are a number of programmatic components which may be suitable for inclusion in the cat café structure. It is important to acknowledge the different disposition of options which will help to enhance the relationship between humans and animals.

According to the American Pet Products Association (APPA), Americans spent \$55.7 billion on pets in 2013 and this number is estimated to increase to \$60 billion in 2014. The highest expenditure is food, at nearly 40 percent. The recent increase in spending on pet food was due to owners purchasing healthier and more expensive food. The next highest area of spending was veterinary care, at approximately 25 percent. Other spending categories included supplies and over-the-counter medicines (23 percent), grooming, boarding and training (7 percent), and live animal purchases (5 percent). This information is relevant when deciding which additional services to include in the cat café.

The main space would be the café/ adoption space. This space would be human and cat friendly, and would focus of providing cats and humans the opportunity to interact. The second main type of space that will be included in the cat café building is an area for product sale. Since pet owners spend billions of dollars on pet food annually, it makes sense to have a selection of pet food, toys, and animal care products.

Due to a lack of space for housing a large number of animals at once, the cat café would have a partnership with an existing animal shelter in the area that would provide cats for adoption. Since there would be a variety of consumers, the most friendly and docile cats would be provided for accommodations in the café. Any café cats would be housed there on a permanent basis until they were adopted.

Building Components

The mixed-use Feline Human Ecosystem will look to celebrate and demonstrate the importance of the human cat relationship. For practical reasons the office floors will

be mostly separate and will not have the building cats roaming freely. However, there will be spaces provided for a safe, controlled interaction between the two. If there are those who dislike cats or have allergies, they will not be required to have physical contact with the animals; however visual relationships will be prevalent. Further design details will be discussed in Chapter 5.

Site Selection

Although a site was selected, it is my intention that the design intervention will become a new building typology and will be duplicated and implemented throughout the world, with variation according to specific site conditions. However, similar concepts and principles should be applied.

Rationale for Selection – Overall Site (Washington, D.C.)

I have chosen Washington, D.C. as the overall site location. The main reason for this selection is that there are a variety of site conditions with different economic, social, cultural, political, and demographic implications. This diversity will allow my building program to address a wide range of urban conditions. Locating my project within a city also allows for a richer design intervention that can be based upon the city fabric and culture of the area. The challenge will be integrating the design interventions within the city fabric in a way that is responsive to the context of the particular community. Having the project in the District of Columbia also makes it easier to visit and do necessary research and analysis, since it is close by.

Washington, D.C. is home to numerous animal organizations. Therefore, it bears significance that this city become a model for other cities to follow when handling the issue of the large amount of stray cats, specifically when it pertains to retaining them in a healthy and responsible manner in order to find them better homes more quickly. Figure 19 is a map showing the organizations that are either headquartered in, or have offices in Washington, D.C. If there is going to be a change in the way cat adoptions and their health and welfare are considered, it should be in a location like Washington, D.C. that is centrally located and has the support of various related animal organizations.

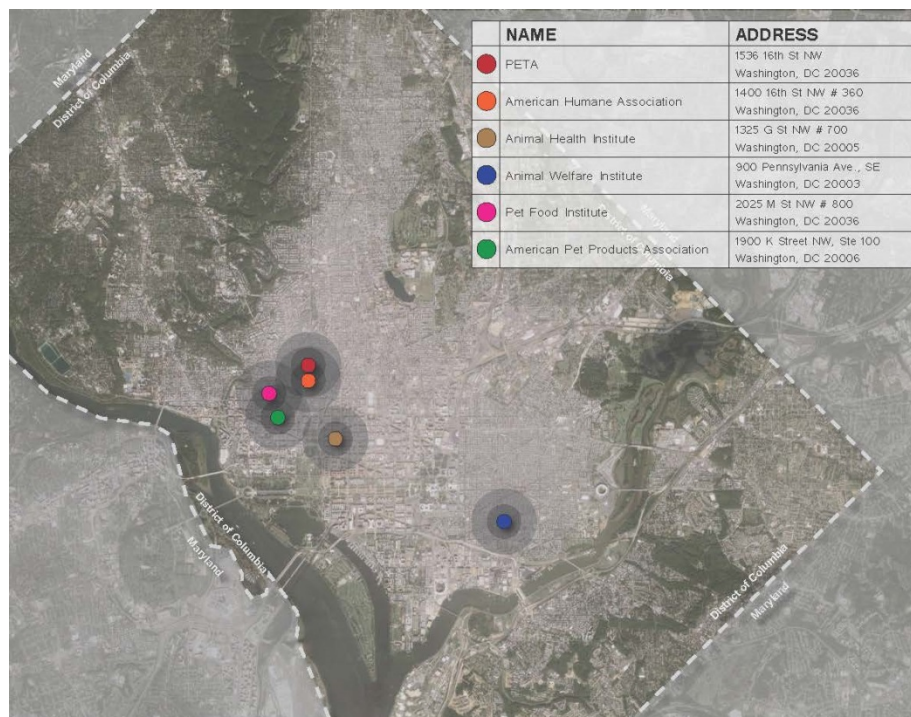


Figure 19: Animal Organizations in D.C.

The Feral Friends Network is organized through Alley Cat Allies and is a group of people across the country and around the world who are actively protecting and

improving the lives of cats.¹⁸” Through this network, I was put in contact with a number of individuals who care for colonies in Washington, D.C. An analysis of Washington, D.C. and its amenities can be found in Chapter 4 of this document. The study of the existing facilities, such as animal shelters, hospitals, schools, and senior centers, will illuminate opportunities and needs within the city.

Rationale for Selection – Specific Site (U Street, Washington, D.C.)

I have selected the U Street neighborhood to locate my Feline Human Ecosystem. In addition to my primary goal of facilitating the interaction of cats and humans, I also want the building to be economically sustainable. This makes the selection of a site with an appropriate market extremely important. It is also crucial to consider the site conditions that are necessary for a structure of this type. Based on my analysis of existing cat cafes across the world, the majority of, if not all of them, were located in the denser part of the city. In addition, they were often found in infill sites, oftentimes occupying the ground level of several buildings, or sometimes occupying several stories of a narrower townhome.

As seen in the “Form” category in Figure 15, the cafes were often embedded in urban blocks and in many of the European locations, the massing of those blocks was extremely similar in form and style. None of the current structures have been designed entirely from the ground up into a space that is optimal for the function of the cat cafe. This is an important criticism because all of the cat cafes were developed within existing structures. The business owners merely focused on the interior design, which often meant bringing in specific cat toys or ‘cat furniture’ to

¹⁸ Alley Cat Allies, Alley Cat Allies’ Feral Friends Network, <http://www.alleycat.org/feralfriends>.

space that they had leased. There is currently no manipulation of the building form to specifically enhance the experience of those who are primarily using it.

When constructing a new building, there is the opportunity to design something specifically for optimal interaction between cats and humans. My thesis also seeks to take this concept a step further. Instead of designing a “cat café” which already exists in locations across the world, I am looking to integrate the idea of a cat café into a larger building which also includes office space. The idea is that people in an office environment could benefit from daily interaction with cats, which can help to lower stress and blood pressure. This is a spatial relationship that is currently unexplored, but I believe it shows promise from an economic and practical point of view.

Encouraging cats in a workplace setting may lead to a lifestyle change by promoting a more relaxed and unique environment.

My thesis will be critically considering the question of how accommodations can be designed to provide spaces that promote a happy and healthy environment for cats and for humans and enhance the relationship between humans and cats. Most of the existing architecture designed for cats, including animal shelters, cat cafes, and otherwise, has not been designed with the primary goal of animal welfare in mind.

Therefore, my thesis first seeks to understand what attributes make a cat ‘a cat’, and then to critically consider how spaces could be designed for their maximum benefit, keeping in mind a cat’s unique characteristics.

Prior to selecting U Street as the desired submarket for this project, it was necessary to look at a number of sales comparables to determine prices throughout the city. I determined prices for commercial areas in Georgetown, U Street, and NoMA, as well

as looked at general demographic information for those neighborhoods. My goal was to determine which location would be most suitable for development of the Feline Human Ecosystem. Since the success of this project depends on an appreciation for pets, I was looking to find a market that could support the retail space. Another major component of the retail space is café-related food and beverage sale. Therefore, making sure there was a market for this was also crucial to the project success.

The main types of demographics being considered were pet owners, pet store patrons, and café patrons. Based on data about these demographics, it was determined that the target market is those ages 24 to 40 that are single, affluent, educated, and have a higher than average area median income. I also concluded that a renter versus owner population would be more likely to frequent the café. The relevance of renter-occupied to owner-occupied households is that a cat cafe fills a need in society since city dwellers may not be able to or may not want to keep pets in their apartments due to regulations or a lack of space. In Japan, the cat cafes were actually developed for the purpose of providing companionship for users who are not permitted to have pets in their apartments. Based on a variety of relevant factors, the U Street neighborhood was decided upon as an optimal choice for development.

While I evaluated a number of different submarkets, including Georgetown, U Street, NoMA, I placed a heavy emphasis on the social character of each of these markets. Upon visiting the DC area, I determined that the U Street area had a culture and demographic most suitable to my target market – those who were likely to own pets, shop at pet stores, and frequent cafes. In addition, the scale of existing buildings was

consistent with that of the one I would look to develop based on the square footages of intended program elements.

There were few major differences when comparing the demographics of Georgetown, U Street, and NoMA. The median ages were all in the mid-30s, the area median income for Georgetown was only slightly higher, and the owner to renter ratio was generally more skewed toward renter-occupied units in all of the submarkets.

Upon a visit to Washington, D.C., I determined that NoMA would not be suitable in character or in scale for my development. The buildings were all extremely large and the area seemed to be still in the process of developing. This, among other reasons, encouraged me to drop NoMA from consideration as a potential submarket for development. U Street on the other hand had a livelihood and culture that seemed to have the ability to support my proposed building type. There were a number of existing cafes along U Street, and the scale of the buildings was appropriate to that of a ground floor café with other building uses above. Georgetown also had a culture that seemed suitable for the proposed type of development. It is an extremely lively and pedestrian-friendly neighborhood with a young demographic.

Now in the process of comparing U Street and Georgetown, the key deciding factor was determining the price per square foot to purchase property in each of these areas. Utilizing the tax assessed ratio of land to improvements calculated for each site, I determined average price per square foot costs in each of the target regions. I had sales data for three properties near the intersection of U Street and 14th Street NW. This is the main pedestrian area in the neighborhood and is only a few blocks walk

from the U Street metro station. In Georgetown I found properties to analyze along the main commercial area on Wisconsin Avenue.

U STREET

1336 U STREET NW	COMPARABLE INFO	Land
Asking Price	\$5,000,000	\$1,993,709
Price/SF	\$833.33	\$ 1,107.62
Building SF	6,000	
Percent Leased	100%	
Property Type	RETAIL	

1336 U STREET NW	TAX ASSESSMENT INFO	Percentage
Lot SF	1,800	
Land Value	\$450,000	39.9%
Improvements Value	\$678,550	60.1%
Total Value	\$1,128,550	100.0%

1355 U STREET NW	COMPARABLE INFO	Land
Asking Price	\$3,200,000	\$1,778,574
Price/SF	\$388.59	\$ 637.25
Building SF	8,235	
Percent Leased	8.1%	
Property Type	RETAIL	

1355 U STREET NW	TAX ASSESSMENT INFO	Percentage
Lot SF	2,791	
Land Value	\$885,580	55.6%
Improvements Value	\$707,750	44.4%
Total Value	\$1,593,330	100.0%

1357 U STREET NW	COMPARABLE INFO	Land
Asking Price	\$2,200,000	\$2,010,418
Price/SF	\$500.00	\$ 720.32
Building SF	4,400	
Percent Leased	0.0%	
Property Type	RETAIL	

1357 U STREET NW	TAX ASSESSMENT INFO	Percentage
Lot SF	2,791	
Land Value	\$885,580	91.4%
Improvements Value	\$83,510	8.6%
Total Value	\$969,090	100.0%

GEORGETOWN

1438 WISCONSIN AVE NW	COMPARABLE INFO	Land
Asking Price	\$2,150,000	\$666,742
Price/SF	\$1,791.67	\$ 987.77
Building SF	1,200	
Percent Leased	0%	
Property Type	RETAIL	

1438 WISCONSIN AVE NW	TAX ASSESSMENT INFO	Percentage
Lot SF	675	
Land Value	\$233,890	31.0%
Improvements Value	\$520,320	69.0%
Total Value	\$754,210	100.0%

1525-1527 WISCONSIN AVE NW	COMPARABLE INFO	Land
Asking Price	\$3,700,000	\$2,398,265
Price/SF	\$565.32	\$ 737.93
Building SF	6,545	
Percent Leased	100.0%	
Property Type	RETAIL	

1525-1527 WISCONSIN AVE NW	TAX ASSESSMENT INFO	Percentage
Lot SF	3,250	
Land Value	\$829,560	64.8%
Improvements Value	\$450,270	35.2%
Total Value	\$1,279,830	100.0%

1675 WISCONSIN AVE NW	COMPARABLE INFO	Land
Asking Price	\$1,725,000	\$663,676
Price/SF	\$727.54	\$ 400.29
Building SF	1,800	
Percent Leased	0.0%	
Property Type	RETAIL	

1675 WISCONSIN AVE NW	TAX ASSESSMENT INFO	Percentage
Lot SF	1,658	
Land Value	\$440,200	38.5%
Improvements Value	\$703,950	61.5%
Total Value	\$1,144,150	100.0%

Figure 20: Sales Comparables – U Street vs. Georgetown
Source: CoStar Group Inc., Transwestern

The average price per square foot of the asking price was higher in Georgetown (Figure 20).

I decided to choose the U Street area, primarily for zoning reasons (specifically FAR) and proximity to public transportation and potential customers. The land around the U Street and 14th Street intersection is zoned CR/Arts, which allows for building on 100% of the lot area, a 3.0 FAR for anything other than residential uses, and a maximum building height of 90 feet. However, the Georgetown area along Wisconsin Ave NW is zoned C-2-A, which allows for a 100% max lot occupancy, but only a 1.5 FAR and 50 foot maximum building height. The available lot square footages in Georgetown were not suitable for the scale of my intended development.

Submarket Background

The selected site is located in Ward 1 and Census Tract 44. According to the 2010 census, the median age of census tract 44 was 33 years with males making up 55.1 percent and females making up 44.9 percent of the population. Non-family households represented 74.7 percent of the population, with 69 percent of individuals over 25 years old being single or never married. The median household income in 2012 was \$105,635, as determined by the 2008-2012 American Community Survey. In addition, 78.8 percent of the population holds either a Bachelor's or Graduate or professional degree. In Washington, D.C. as a whole, 53.3 percent of the population holds a Bachelor's or Graduate degree, while the median household income is only \$66,583. According to housing tenure information in the 2010 U.S. Census, 46.5 percent of the occupied housing units in the census tract were renter occupied, while 53.5 percent were owner occupied.

The target market characteristics for this particular building were those who were likely to frequent cafes, those who were likely to own pets, and those who were likely to own a cat or enjoy spending time with one. The first assumption is that the café would be best suited for an affluent population, since these people would most likely be willing to spend money on this type of amenity. Therefore, I was looking for areas with a higher area median income as a method of comparison. I was also assuming that a younger demographic would be more likely to visit a café. This demographic data is based on Starbucks' target audience. According to an article from *Chron: Small Business*, Starbucks' primary target market is men and women aged 25 to 40, which account for almost half (49 percent) of its total business. According to the

Small Business Development Center Network, “Coffee shop patrons are younger, more affluent, and educated and are 22 percent more likely to be aged 18-24. They are also 65 percent more likely to have an annual household income of \$100K+. Coffee shop patrons are 28 percent more likely than the average American adult to be single and 70 percent more likely to have a post graduate degree.” Each of these characteristics makes locating this type of amenity in a relatively affluent area of the city a good decision. Based on the target market demographic characteristics, the U Street area is well-suited for the proposed development.

Precedent Analysis

To understand how to focus design intentions, it is crucial to examine a number of precedents. Not only does this thesis need to consider good examples of architecture that has been designed to maximize animal welfare, but it also needs to provide a critique of existing structures to determine where improvements can be made. First, looking at the way animals design shelter for themselves can provide important insight. Many types of animals have been creating places for themselves and their families for shelter and rest for thousands of years. These structures include beehives, beaver dams, and bird nests. What can be identified as determining factors in the design of these spaces? Given an opportunity to create space for oneself, it seems logical that this space would be optimally suited for this creature and its needs. How does observing this design and analyzing forms and intentions teach us about what animals value in their own habitats?

In addition, there are examples beginning hundreds of years ago of designs by humans for the use of animals. These spaces were designed according to how we envisioned the animals would use them, based on how those animals move. More recently, structures have been built for pets, which more carefully consider the well-being of the users.

Architecture for Animals

Another consideration which warrants analysis is those structures that have been designed by humans for the use of certain animals. Examples of this stretch back into the 15th century and are present in cultures across the world. It is critical to examine the design of these structures to determine if and how they are carefully designed for the use by a particular

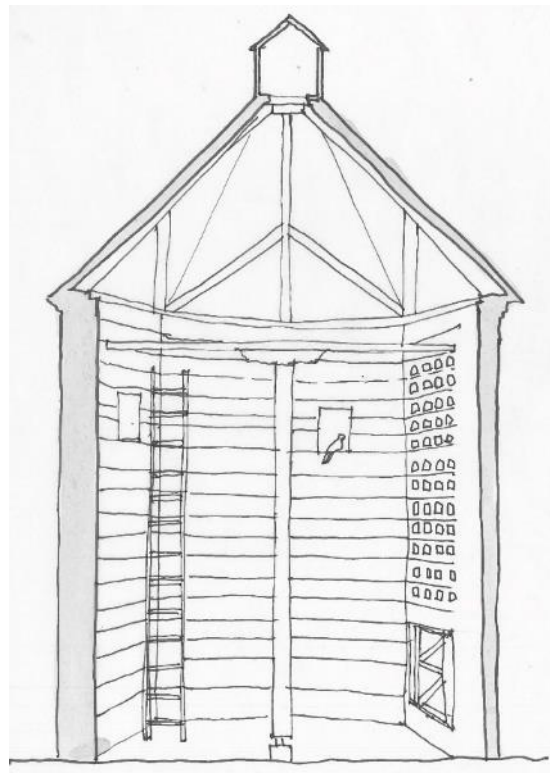


Figure 21: Dovecote, typical (1700s-1800s)

species. Is there a common design language which we can look to as a reference for optimal design of a structure or intervention for cats?

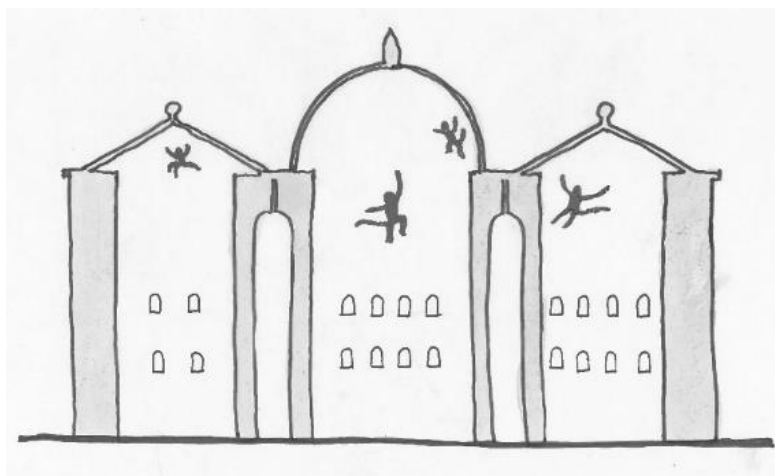


Figure 22: Monkey-House, London Zoo – George Scharf (1829)

Through initial research, I have identified three major categories of architecture for animals: sport, food, and observation. There are several types of structures which can be used to talk about the use of animals for sport, such as stables and dog kennels.

After a brief analysis of these types of structures, it is apparent that they were designed with consideration for the animals that were meant to use them. In

Monkey-House (Figure 22). The spaces were oriented vertically to account for a monkey's tendency to move up and down.



Torre Argentina Cat Sanctuary, Rome, Italy

The Torre Argentina Cat Sanctuary began informally in 1994 when one woman decided to care for feral cats that were occupying the ruins at the intersection of Via Florida and Via Largo Argentina, a few blocks away from the Pantheon (Figure 24). Eventually, the A.I.S.P.A (Anglo-Italian Society for the Protection of Animals) became involved and assisted the sanctuary with funding. Now, there are a number of volunteers who take care of the over 250 cats. It is a no-kill shelter and all of the animals receive food and medical care. Most of the cats live outside, but there is an indoor area with cages for animals with special needs (Figure 27).



Figure 27: Torre Argentina Cat Sanctuary Ruins



Figure 27: Torre Argentina Cat Sanctuary Interior

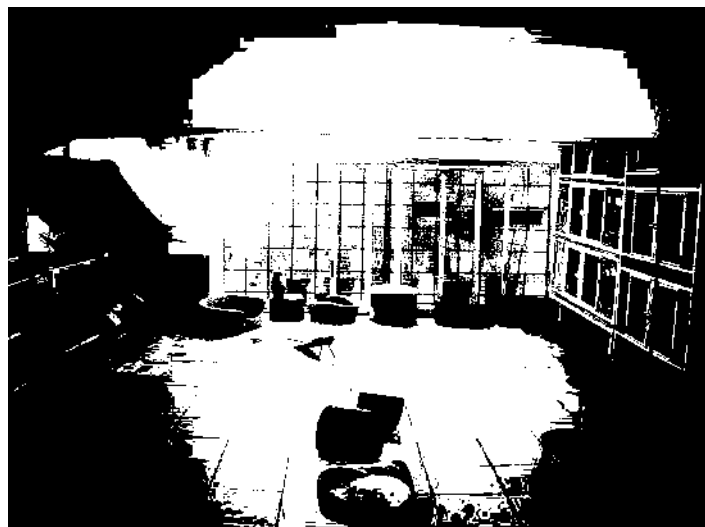


Figure 27: Torre Argentina Cat Sanctuary Interior

Tourism plays a large role in the success of the sanctuary as visitors of the city will often donate money to the shelter. The volunteers also organize numerous fundraising activities in an attempt to find alternate sources of income.

When I visited the sanctuary in 2011, I did not realize there was an organization located in the ruins that cared for the animals. However, it was amazing to see the cats having full reign of the outdoor environment and having freedom. The fact that they also receive food and shelter makes it an optimal environment. It is a relatively economical endeavor. There was little space constructed solely for the purpose of caring for the animals since the cats can take shelter in the existing ruins. The only indoor spaces are those for animals with special needs. In addition, the site's location makes it a prime candidate for assistance from tourism.

Animal Care Facilities

Recently, there has been an awakening to the realization that existing animal shelters have been poorly designed. A few of these examples are introduced here as a frame of reference for critique. There are however, several firms which have tried to design a more pleasant environment for the animals. Some examples include Garrison Architects, Staten Island Animal Care Center; Washington Animal Rescue League, D.C.; Swatt Miers Architects and their shelters in California; ARQ Architects, New York Animal.

An example of an animal shelter that could be improved upon is the Washington Humane Society location at 7319 Georgia Avenue, NW. This shelter was a townhome that had been converted into an animal shelter. It was narrow and the animals were all in cages stacked wherever there was available space. There was no

separation between the public and private spaces, so the staff offices were located in a room on the ground floor. The part that made the building most in effective was the experience for the visitor. When visiting an animal shelter to look for a cat to adopt, having a space to take the cat out of the cage to run around and play is great to have, because it allows the people and the cats a chance to interact with one another. While I was at the Washington Humane Society there was a little girl there with her mother who complained that she could not play with the cat well while it was in the cage. The room for playing with the animals was actually upstairs, located between some offices and kitchen or laundry area.

In this instance, the design of the shelter was not conducive to humans and animals getting to know each other and playing. It was also not conducive to the nature of a cat, which is to move freely, climb higher to observe, go lower to pounce, and to socialize with other cats, objects, or humans.

Chapter 4: Thesis Research Analysis

Measuring Success

How do I know if I have succeeded with the design and implementation of accommodations for cats? The attributes listed in Chapter 2 of this text can be tools to measure a cat's happiness, health, and overall welfare. Ideally, a cat should be able to use all of its senses and be in a healthy environment. Any design intervention that is proposed should be tested for its ability to support and allow for a cat to be 'a cat'. On the contrary, how do we know current accommodations are inappropriate for these animals and how can understanding these pitfalls help us in re-envisioning existing spaces? These aspects have been addressed in Chapter 3, Animal Care Facilities.

In addition to the measured benefits for cats, there are also human benefits that are advanced. The café space that is designed should promote human happiness as well.

Site Analysis

Site Documentation (Washington, D.C.)

As was introduced above, I have selected the city of Washington in the District of Columbia for my general site. In the process of selecting sites for interventions of various scales, I first completed a general analysis of the city. I analyzed a number of factors including the area median income (AMI) of each neighborhood and the location of metro stops in the city. The identification of AMI is important because it

helps to identify areas which are more or less financially fortunate than others (Figure 28). Being aware of locations that are easily accessible by metro will illuminate site opportunities (Figure 29). Other site considerations were animal shelters, animal hospitals, pet stores, schools, recreation, hospitals, homeless shelters, senior centers, and day cares (see below). These are relevant when considering the market analysis. For example, is there any location where these amenities are lacking and my design intervention could fill a need? Conversely, is there any specific location where opportunities for partnerships with existing facilities could be formed?

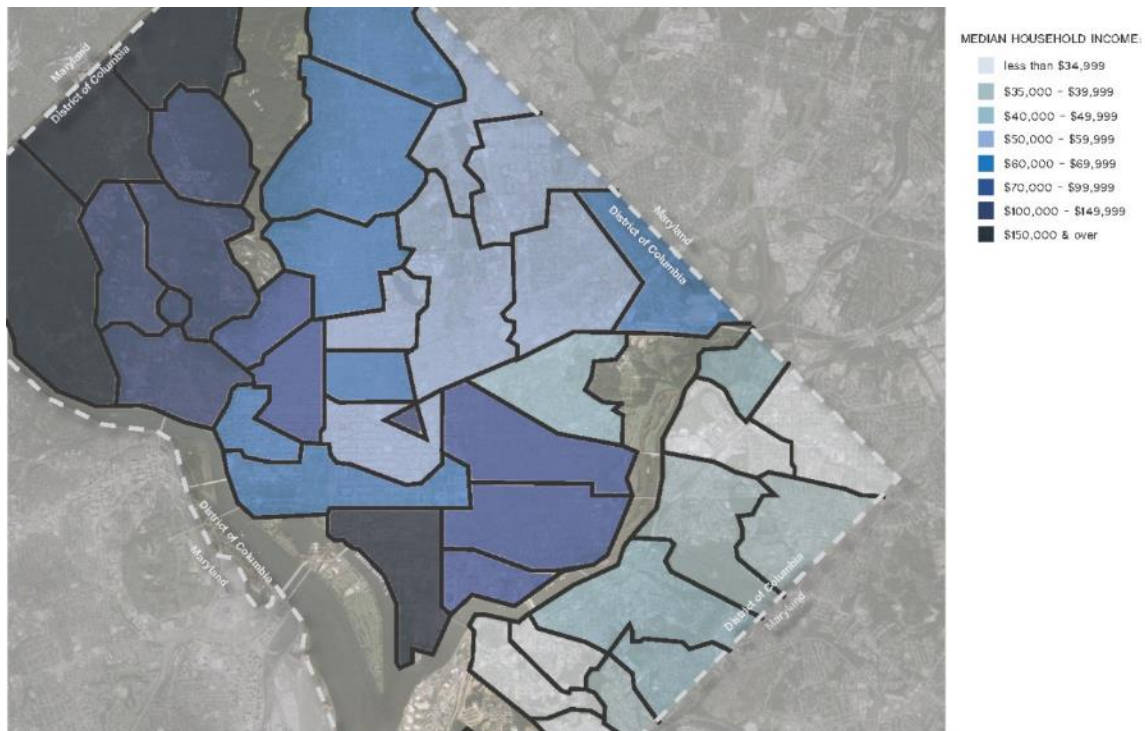


Figure 28: Washington, D.C., Area Median Income (AMI)

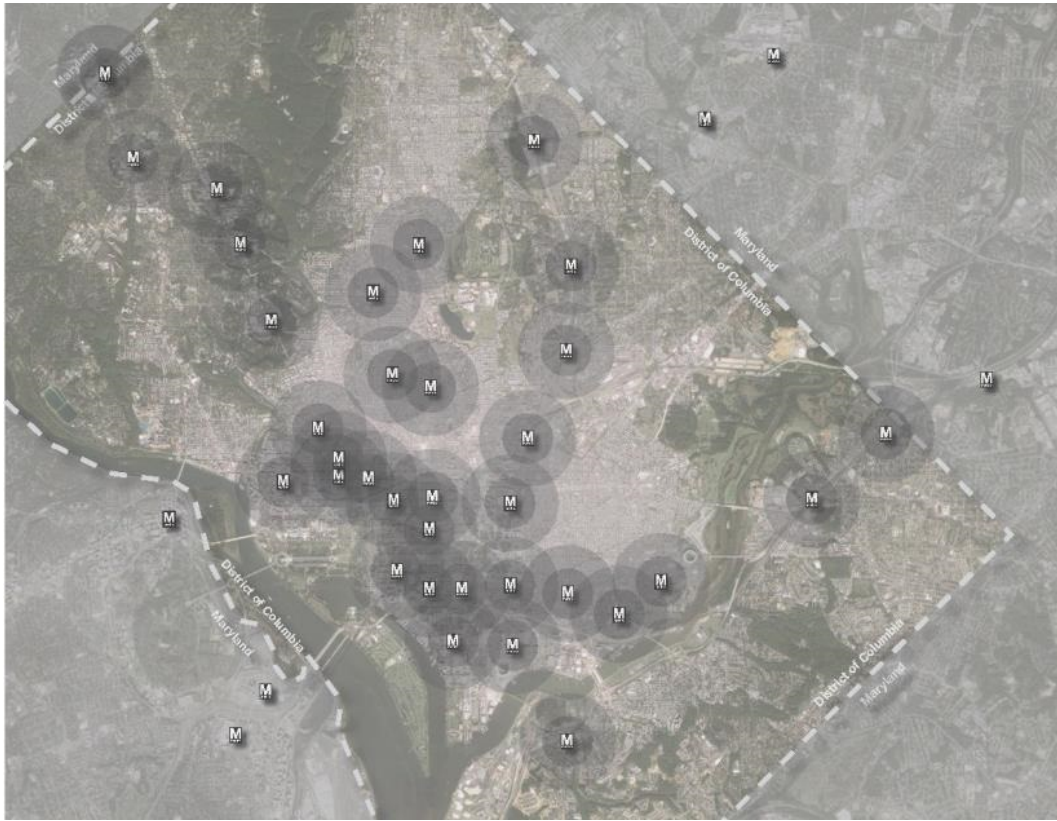
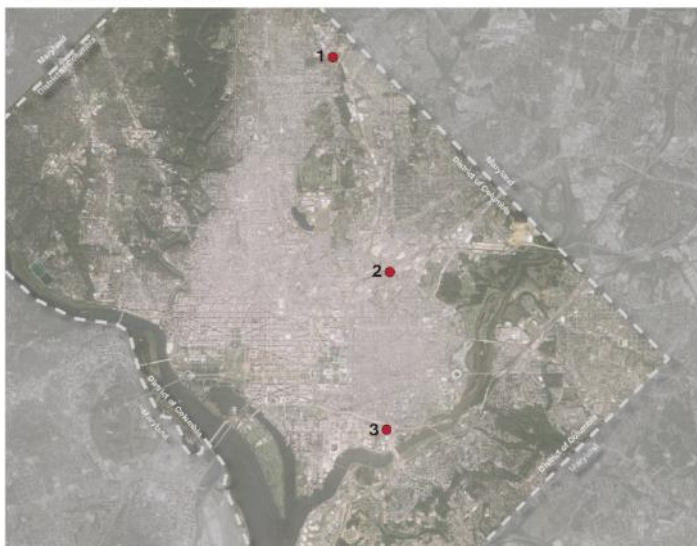


Figure 29: Washington, D.C., Metro Stations

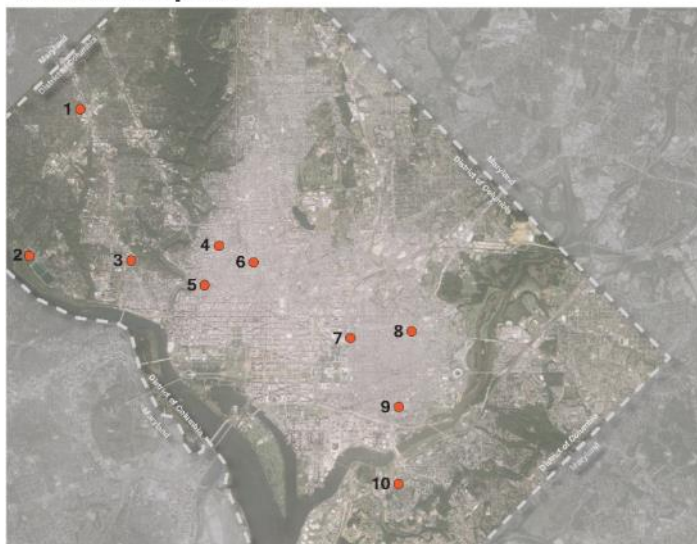
Animal Shelters



	NAME	ADDRESS
1	Washington Animal Rescue League	71 Oglethorpe Street, NW Washington, DC 20011
2	Washington Humane Society	1201 New York Avenue, NE Washington, DC 20002
3	Washington Humane Society	1001 L Street, SE Washington, DC 20003

Figure 31: Washington, D.C., Animal Shelters

Animal Hospitals



	NAME	ADDRESS
1	Friendship Hospital for Animals	4105 Brandywine Street, NW Washington, DC 20016
2	VCA MacArthur Animal Hospital	4832 MacArthur Blvd, NW Washington, DC 20007
3	Collins Animal Hospital	1808 Wisconsin Avenue, NW Washington, DC 20007
4	Adams Morgan Animal Hospital	2112 18th St, NW # 1 Washington, DC 20009
5	Dupont Veterinary Clinic	2022 P Street, NW Washington, DC 20036
6	CityPaws Animal Hospital	1823 14th Street, NW Washington, DC 20009
7	Union Veterinary Clinic	609 2nd Street, NE Washington, DC 20002
8	AtlasVet	1326 H Street, NE Washington, DC 20002
9	Capitol Hill Animal Clinic	1240 Pennsylvania Avenue, SE Washington, DC 20003
10	Animal Clinic of Anacostia	2210 Martin Luther King Jr. Avenue, SE Washington, DC 20020

Figure 30: Washington, D.C., Animal Hospitals

Pet Stores



	NAME	ADDRESS
1	Pet Mac	4220 Fessenden Street, Washington, DC 20016
2	Pro Feed	5104 MacArthur Boulevard, NW Washington, DC 20016
3	Unleashed by Georgetown	1655 Wisconsin Avenue, NW Washington, DC 20007
4	Petco	3505 Connecticut Avenue Washington, DC 20008
5	Petco	3100 14th Street, Washington, DC 20010
6	Fido and Kitty's World	4130 Georgia Ave, NW Washington DC 20011
7	Green Pets	1722 14th Street, Washington, DC 20009
8	Dupont Pet Stop	2024 P Street, NW Washington, DC 20036
9	Pet Food Institute	2025 M St NW # 800 Washington, DC 20036
10	Unleashed by Petco	1200 First Street, NE Washington, DC 20002
11	Metro Mutts	508 H Street, NE Washington, DC 20002
12	Metro Mutts	407 8th Street SE Washington, DC 20003
13	Howl to the Chief	733 8th Street SE Washington, DC 20003

Figure 33: Washington, D.C., Pet Stores

Schools

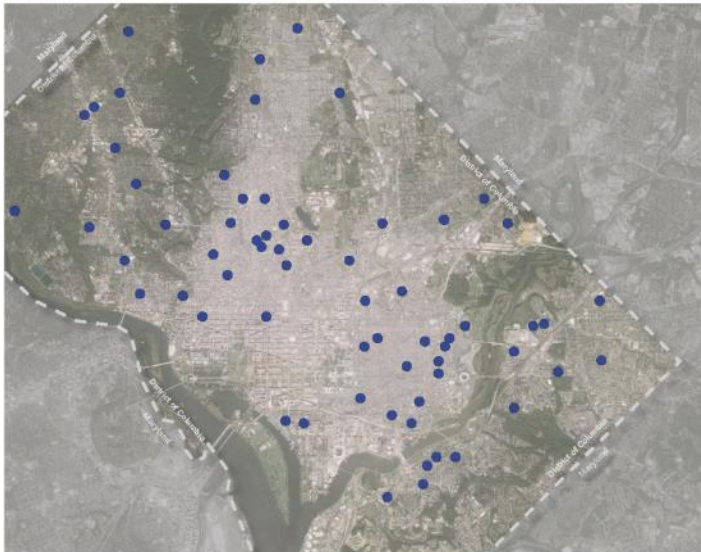


Figure 32: Washington, D.C., Public Schools

Based on the mapping of these various amenities and an overlay of them (Figure 34), I have determined a number of locations that would be suitable for varying scale interventions that could serve stray and feral cats, and the community.

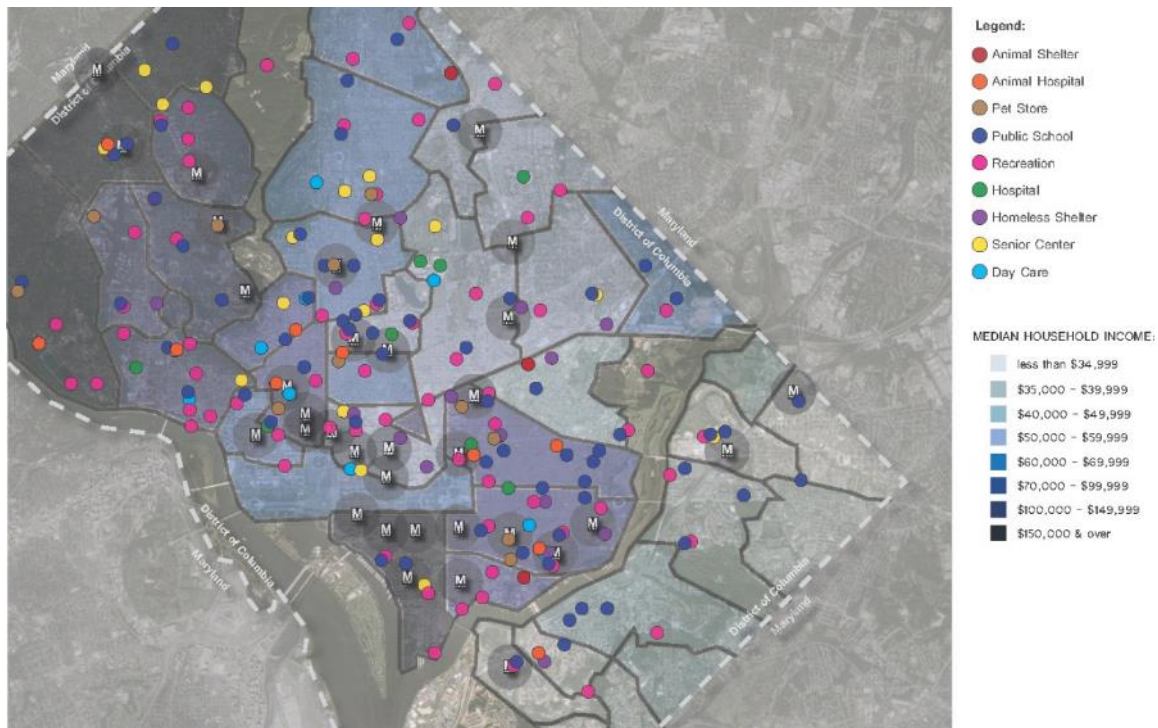


Figure 34: Washington, D.C., Overall Mapping

Overall Site Documentation (U Street, Washington, D.C.)

When studying the U Street neighborhood, a better identification of amenities and surrounding uses is necessary. Figure 36 is an overall land use diagram of the U Street area. In Figure 35, the amenities in the neighborhood are outlined, indicating which areas are best served and how uses are distributed. There is an animal hospital located about an eighth of a mile south of the site, which is extremely convenient for obtaining care for the cats in the Feline Human Ecosystem. This presents an opportunity for forming a partnership with the CityPaws Animal Hospital. As is seen from this map, there are no pet stores located within walking distance to the U Street

Metro Station, which demonstrates that there could be a market for a pet store that is conveniently located. Another benefit of this site include the close proximity to the Washington Humane Society on New York Avenue NE, which is less than three miles from the proposed site. There are also a number of schools located close by which could help to satisfy some of my goals for this intervention. The Feline Human Ecosystem is intended to serve as an educational facility to explain the proper care of animals, an understanding of the cat species, the issues surrounding stray and feral cats and their treatment, and general animal welfare considerations including the

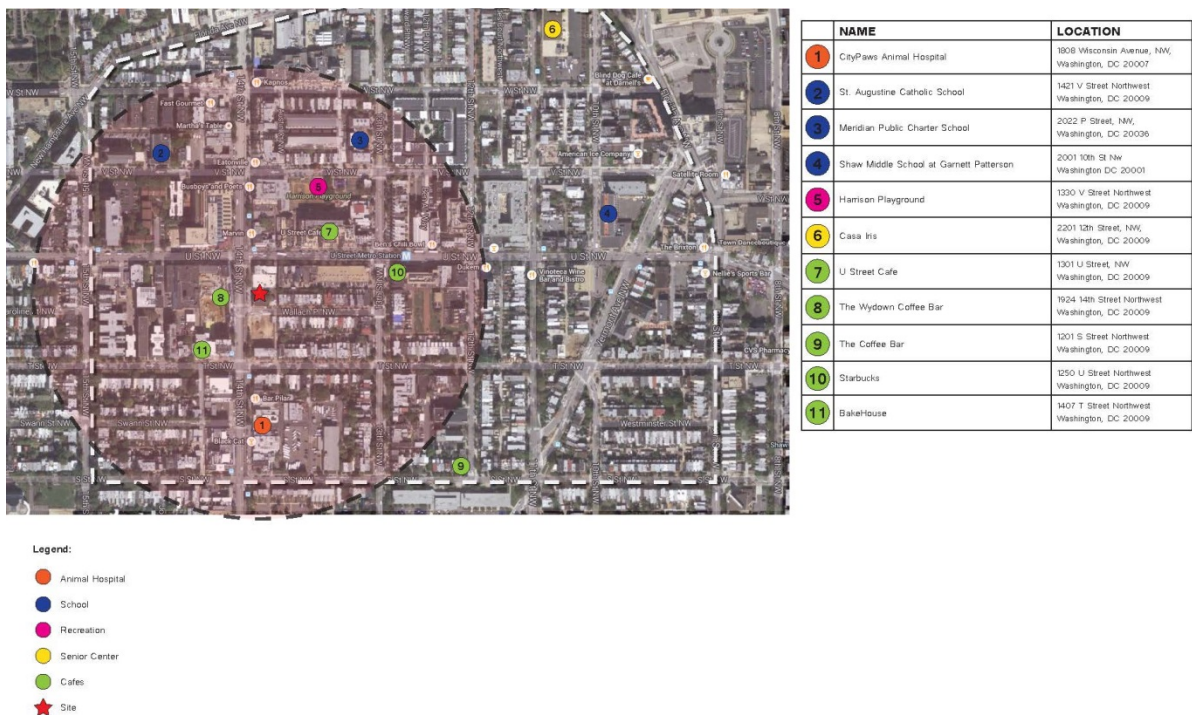


Figure 35: U Street, Washington, D.C., Identification of Amenities

necessity of spaying and neutering. It is intended that the Feline Human Ecosystem could be a place for field trips or educational programs to occur, which would benefit from a partnership with existing schools that are nearby.

Animals and cats in general also play a role in child learning and development, as explained earlier in this document. If there was an opportunity for the children to

form relationships with the cats, they could hopefully avoid any social or behavioral issues and develop a healthy understanding of animals and their role in society.

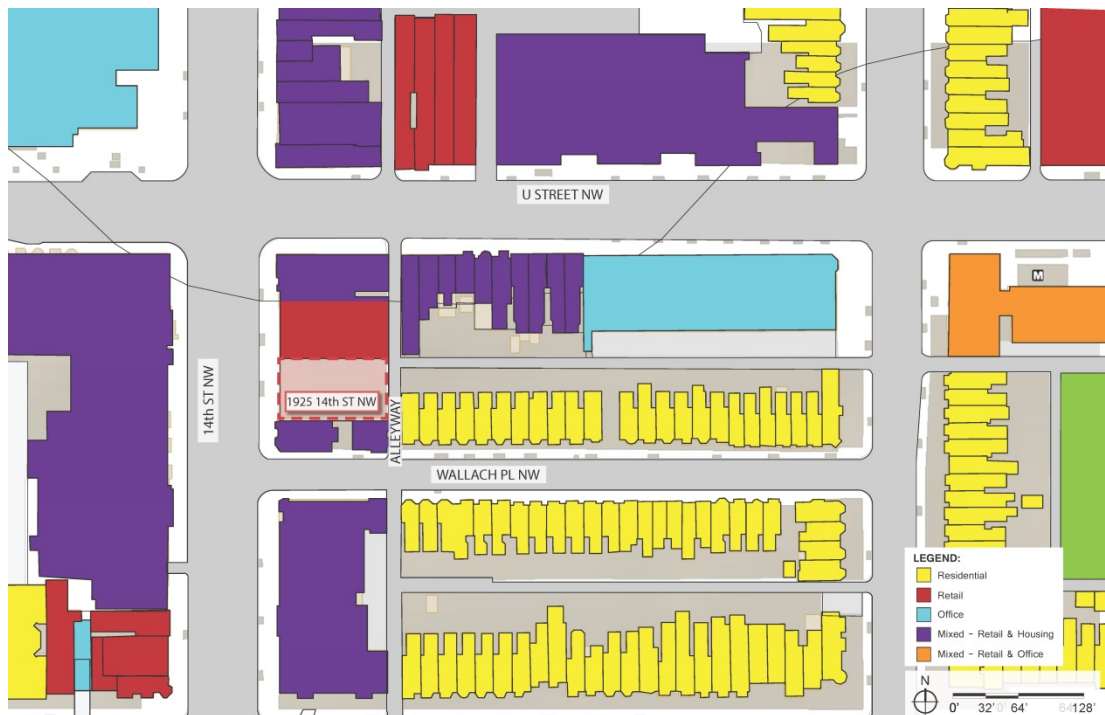


Figure 36: Surrounding Building Uses

History of Site

The site I have selected to develop is located in the U Street/Cardozo neighborhood in Washington, D.C. at 1925 14th Street NW. U Street is a commercial and residential neighborhood in Northwest Washington, D.C. The U Street Metro Station operates on both the green and yellow lines and is located on U Street between 12th Street and 13th Street (Figure 37). The U Street area is in Ward 1 and Census Tract 44, which registered a 76.6 percent population increase from 2000 to 2010 according to the U.S. Census, with the 2010 population being 4,572. The neighborhood is becoming an extremely popular location to live, work, shop, and relax.

Currently, the site at 1925 14th Street NW is a parking lot. I believe there is a higher and better use for the site. The particular site was selected instead of others because

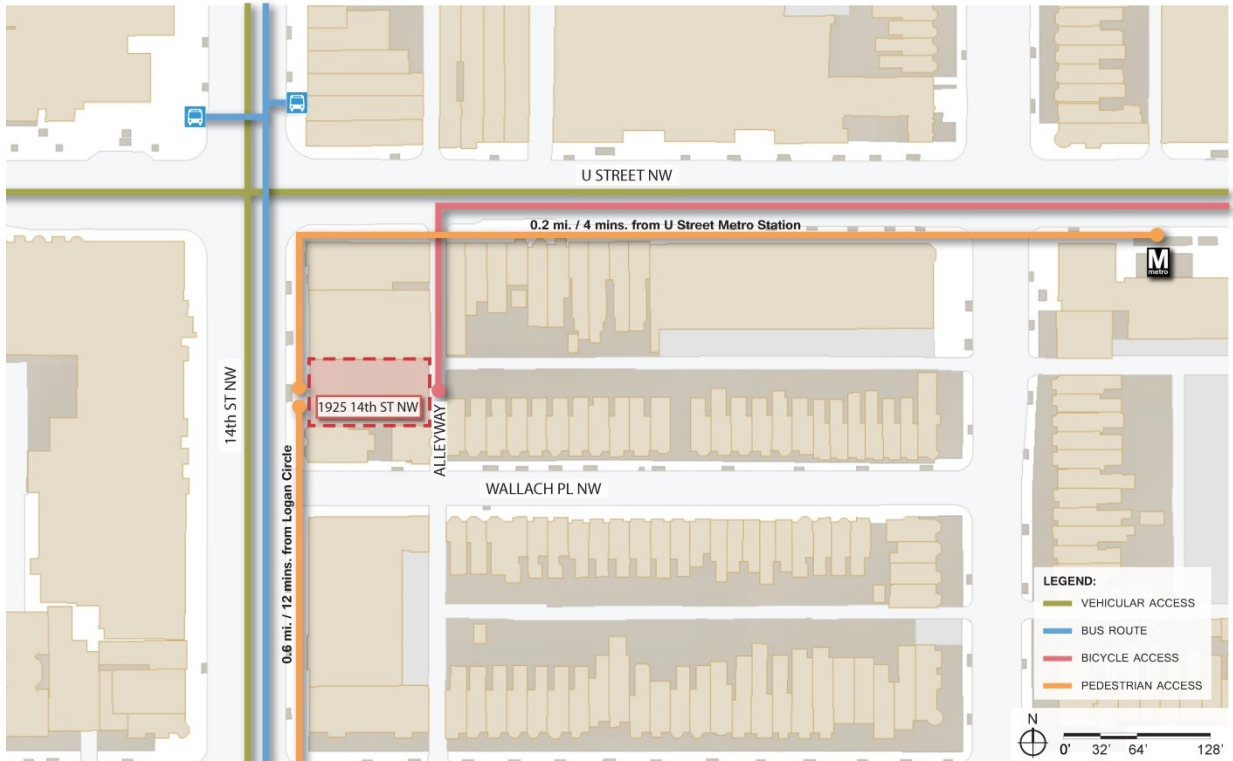


Figure 37: Site Access

of its lot square footage. Other sites I was considering were at 1355 U Street and 1357 U Street. However, these only had lot sizes of 2,791 square feet. With an FAR in this zoning area of 3.0, this would only allow for a total building area of 8,373 square feet. This is not nearly enough to encompass all of the intended program components and make it financially feasible by providing generic office space. The site at 1925 14th Street has a lot area of 6,360 square feet and allows for a maximum building area of 19,080.

Upon visiting the DC area on a Saturday afternoon, I was able to fully experience the character of the U Street neighborhood. It was very crowded with pedestrians,

headed towards various food establishments. It was easy to determine the most active parts of the neighborhood. Once you walk too many blocks to the east of the metro, there is a sharp decline in foot traffic. A similar effect was noticed when walking too far north on 14th Street or too far west on U Street past the 14th Street intersection. This was not true, however, when traveling south on 14th Street. This was easily the most crowded intersection and the one block south of the U Street and 14th Street NW intersection was very populated. Across from the site, on the west side of the street is a newly constructed 267 unit mixed-use building. On the ground floor of this structure was a new Trader Joe's – a large draw for the area. This pedestrian-oriented environment, as well as the multi-family apartment buildings and associated commercial uses, provides a strong market base for a development at 1925 14th Street NW.

Site Analysis Diagrams

Below are a number of site plans and diagrams which explain the site location, conditions, and dimensions.

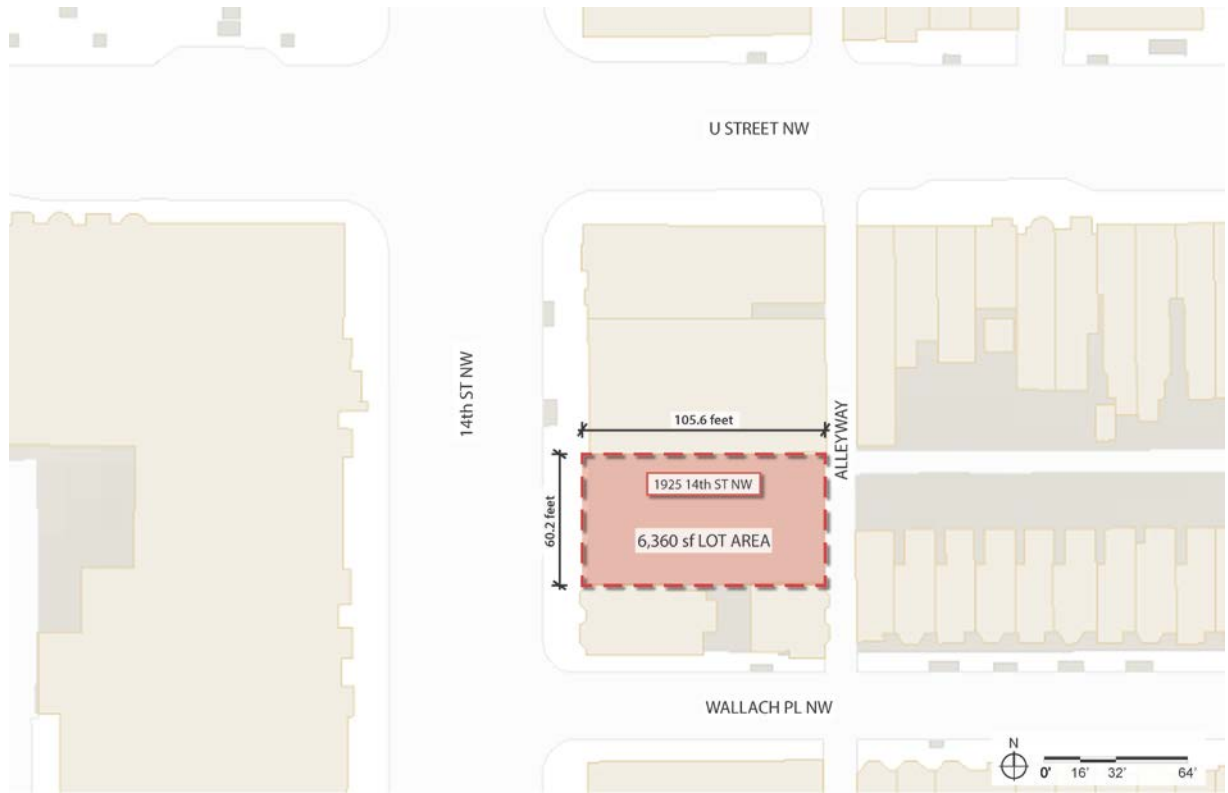


Figure 38: Site Dimensions

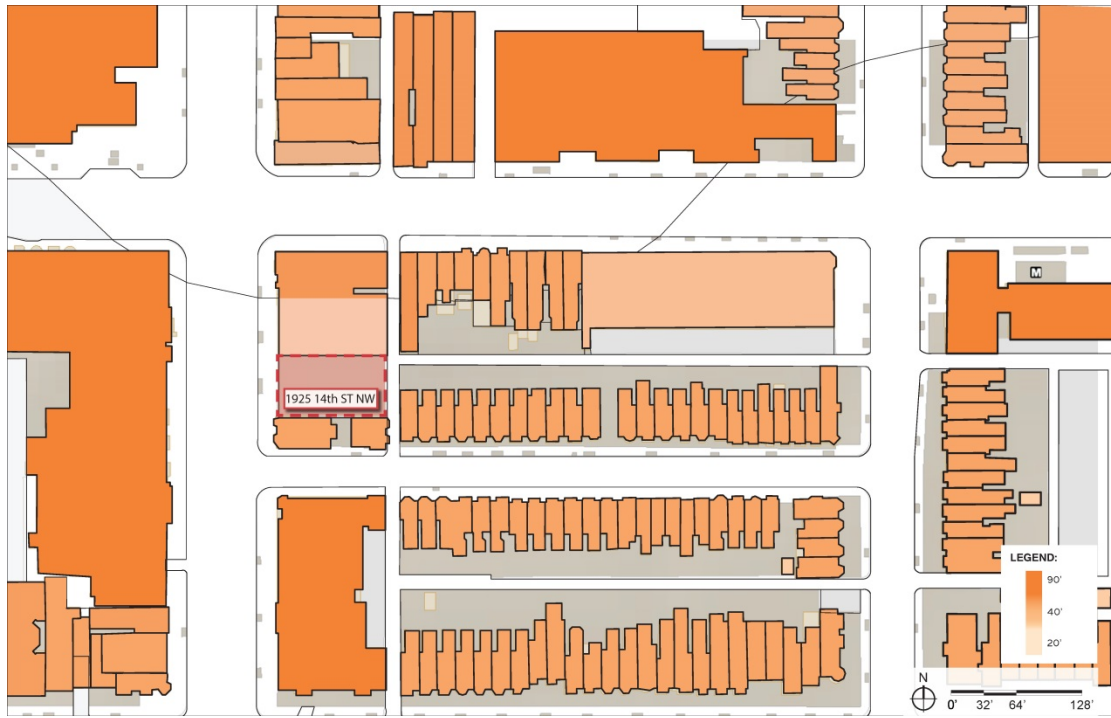


Figure 40: Surrounding Building Heights

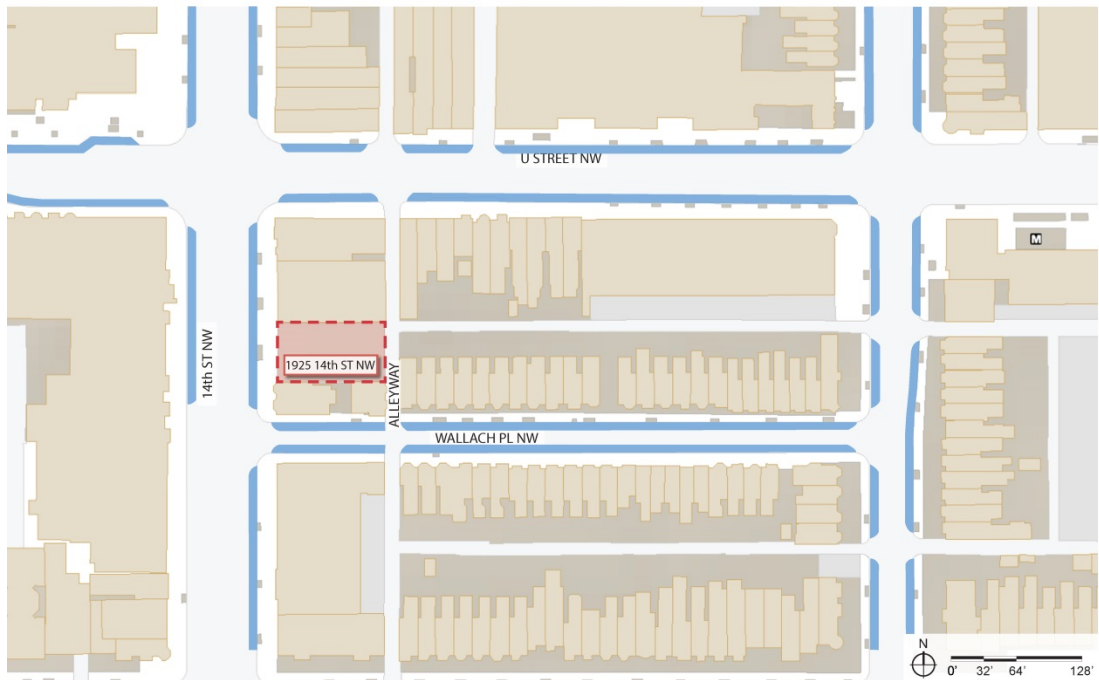


Figure 39: Parking Availability

Problems and Opportunities

Due to great visibility on 14th Street, the site is in an optimal location to attract visitors. It is also an extremely short walk from the U Street Metro Station (Figure 37). There are a great number of multifamily buildings located nearby, as well as a young demographic. In fact, within the past three years there were approximately 500 multi-family units delivered within a quarter mile from the selected site. Aside from this, much of the buildings within a quarter mile radius are residential, ranging from single-family homes, to apartments and condos (Figure 41, Figure 42).



Figure 41: Housing around the Site

Zoning Considerations

The development standards outlined in Title 11 of the District of Columbia Municipal Regulations (DCMR) regulate the use of land, the height and size of buildings, the size of lots, provision of yards, parking requirements, and more. If the proposed

project is in conflict with the Zoning Regulations or the Zoning Map, the person or organization may choose to either modify the proposed project to conform to the applicable zoning requirements, appeal the Zoning Administrator's (ZA's) decision to the BZA, or apply for relief from the ZC or the BZA.

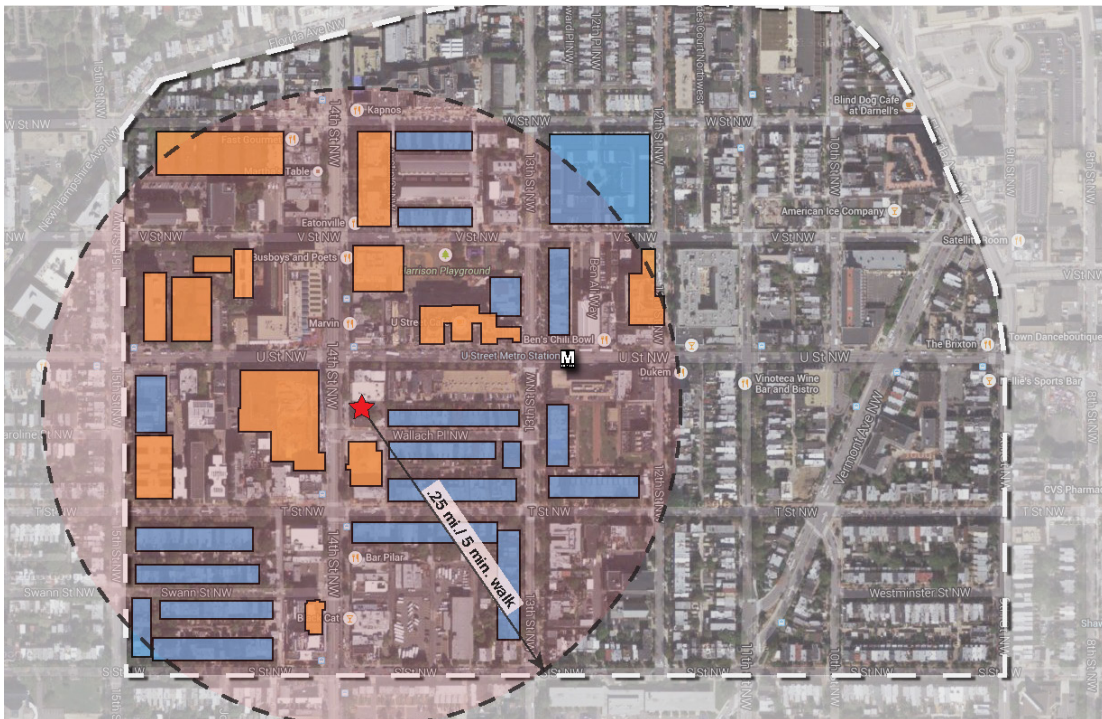


Figure 42: Housing Options - orange = apartments, condos; blue = single-family

The subject property at 1925 14th Street NW is located in the Mixed Use Commercial Residential (CR) District and the Uptown Arts-Mixed Use (ARTS) Overlay District. This property will be redeveloped from its current state as a parking lot, to a mixed-use building that can be used by the U Street and 14th Street community, citizens of D.C., and visitors to the area. The mixed use development of retail and office will provide additional activities for those living nearby and will provide business and employment opportunities. Not only does it satisfy the needs of community

members, but it satisfies the purposes and goals of the Commercial Residential and ARTS Overlay zoning districts.

The purpose of the CR District is to “encourage a diversity of compatible land uses that may include a mixture of residential, office, retail, recreational, light industrial, and other miscellaneous uses” (11 DCMR § 600.1.). It is intended to "help create major new residential and mixed use areas" and "in a variety of ways, create environments conducive to a higher quality of life and environment for residents, businesses, employees, and institutions in the District of Columbia as specified in District plans and policies" (11 DCMR § 600.3.).

The purpose of the ARTS Overlay District is to “encourage a scale of development, a mixture of building uses, and other attributes such as safe and efficient conditions for pedestrian and vehicular movement, all of which will be as generally required by the Comprehensive Plan,” to “require uses that encourage pedestrian activity, especially retail, entertainment, and residential uses,” “provide for an increased presence and integration of the arts and related cultural and arts-related support uses,” “expand business and job opportunities, and encourage development of residential and commercial buildings,” and “strengthen the design character and identity of the area by means of physical design standards” (11 DCMR § 1900.2.).

The CR District allows for a maximum lot occupancy of 100% for non-residential uses, a maximum FAR of 3.0, a maximum building height of 90 feet, and a rear setback of 3 inches per foot of height, but not less than 12 feet. The ARTS Overlay District provides for flexibility in use, height, bulk, bonus density, and combined lot development. Due to the regulations in 11 DCMR § 1904.2, the building is able to

receive a bonus density for any preferred retail or service use, or preferred arts and arts-related uses on the ground floor in excess of the required 0.5 FAR (11 DCMR § 1904.1-1904.2). With the current distribution of retail uses being estimated at 5,175 square feet, this brings the maximum allowable FAR to 3.4. This is achieved by having a preferred retail or service use, or preferred arts and arts-related uses (found in 11 DCMR § 1907, 1908) on the ground floor in excess of the required 0.5 FAR. This bonus floor area would allow for an additional retail tenant (or an expansion of the square footage allotted to the two current retail tenants), which would bring in additional rental revenue. The new total building square footage would be 21,668. Due to zoning requirements, the property owner will need to provide parking spaces for retail space above 3,000 square feet, at the rate of one space for every 750 square feet. This comes out to a total of 3 parking spaces (including the bonus density), at approximately 300 square feet each for a total of 900 square feet for parking. In order to leave enough ground floor square footage for leasable purposes, the development will see to achieve a zoning variance for some of the required parking. With a rear setback of 19 feet, this will allow for one handicapped parking spot. Locating the parking at the rear of the site with access from the alleyway, the building will have a footprint of 5,194 square feet. To achieve maximum FAR, the building will need to be a total of 4 stories, with some additional amenity space provided on the roof. If the building were to provide all three parking spots at the rear with access from the alleyway, the building footprint would be severely reduced, which would force an unrealistic retail space, and would reduce the potential rental income.

A zoning variance for the parking spots will be obtained because of the site's optimal location in relation to public transportation. There is a bus stop adjacent to the site, at the intersection of U Street and 14th Street, which provides service to various parts of the district. As mentioned earlier, the U Street Metro Station, which operates on the green and yellow lines, is less than one quarter mile from the proposed site. In addition to the easy access to public transportation, there is a large amount of street parking along U Street and 14th Street (Figure 39).

The building height will need to stay within the limits regulated by section 1902 of the 11 DCMR. This zoning regulation states that, "In the underlying CR District, if a building is located on a lot that abuts a street, an alley, or a zone district boundary with a Residence District, no part of the building shall project above a plane drawn at a forty-five degree (45°) angle from a line located sixty-five feet (65 ft.) directly above the property line on each such street, alley, or zone district boundary line."

Under the circumstances, the building will be achieving a maximum height of 45 feet and will therefore not need to consider this wording in the zoning regulations.

Although the construction proposed at 1925 14th Street NW is "by right" in this current stage of planning, the property owner still needs to obtain a building permit before construction and Certificate of Occupancy after construction is complete.

These are acquired from the Zoning Administrator at the DCRA. This project will be an asset to the developing community as in its current state, it is not a place that is readily available to the public. It currently serves as a parking lot, which can only be accessed through the alleyway at the rear of the site, and presents a tall chain-link fence to the sidewalk along 14th Street NW.

Numerous mixed-use and multi-family structures have been built within the past few years, making U Street an extremely popular neighborhood for young professionals looking to be close to a variety of amenities. The development proposed at 1925 14th Street NW will enhance the community image and unite the community by providing activities for those living nearby, helping to draw others to the area, and providing business and employment opportunities. The proposed development satisfies the needs of members of the community for social, arts-related, and pedestrian-oriented spaces, and is consistent with the goals of the ARTS and Commercial Residential zoning districts.

Aside from the benefit of uses that will be brought to the neighborhood, the architecture of the building will also be consistent with that of the area. Beginning with the S Street NW intersection and stretching down to N and O Streets NW is the 14th Street Historic District. Although the subject property is not in the historic district itself, it is crucial to stay within the character of the block and create a building with modern architectural appeal that respects the existing architectural style.

Discussion of Program

Program Tabulation

My goal is to choose a program that best combines my broader intentions of how animals and humans can optimally serve one another, while providing something that is suitable based on a financial feasibility analysis.

The main space would be the café/ adoption space. This space would be human and cat friendly, and would focus of providing cats and humans the opportunity to interact. Taking into consideration health codes and regulations, there will also need to be a space for serving food and beverages separate from the cat and lounge area.

The second main type of space that will be included in the cat café building is an area for product sale. This could serve as a convenient location for pet products in the community and would be a reliable way to bring in revenue to sustain the operation of the cat café facility.

Due to a lack of space for housing a large number of animals at once, the cat café would have a partnership with an existing animal shelter in the area that would provide cats for adoption. Since there would be a variety of consumers, the most friendly and docile cats would be provided for accommodations in the café. Any café cats would be housed there on a permanent basis until they were adopted.

Animals such as cats and dogs have a healing effect and are often used in therapy, as was seen in Figure 2¹⁹. Therefore, there may also be a program component which shares the cats with hospitals, the elderly or even children to enhance their learning. To more effectively incorporate the benefit of companion animals for people in the community, flexible space in the building for therapy, field trips, birthday parties or educational programs may be suitable.

Looking at the existing cat cafes across the world for reference, there would probably be approximately fifteen cats living in the café at one time. Keeping this in mind, the design goals would include spaces that would be best for the cats' welfare, as well as

¹⁹ Patrice Hoffman, 14 Ways Your Cat Improves Your Health, July 26, 2013, <http://www.care2.com/causes/14-ways-your-cat-improves-your-health.html>.

a fun and relaxing space for interaction with humans and potential owners. As is typical in other existing cat cafes, it would be necessary to limit the amount of people in the cat area at one time, as to not overwhelm the animals. Similarly, there may also be a time limit for visiting the café depending on business operations and if there is a need to mitigate customer demand due to popularity.

Spatial Consideration Applications

Before I began designing the building, I did an analysis of the movement scale of adults, children, and humans. These were the parties that I saw would be occupying the building, and therefore understanding the required spaces for each would be key. One thing I determined was that cats need minimal space to accomplish a variety of different movements. In fact, the space is better designed with a vertical consideration since cats have the ability to climb straight up. They can also fit in extremely narrow spaces. This is in comparison to humans where there is more architecture required to facilitate different types of movement. For a full outline of the analysis, please see the following chart (Figure 43).

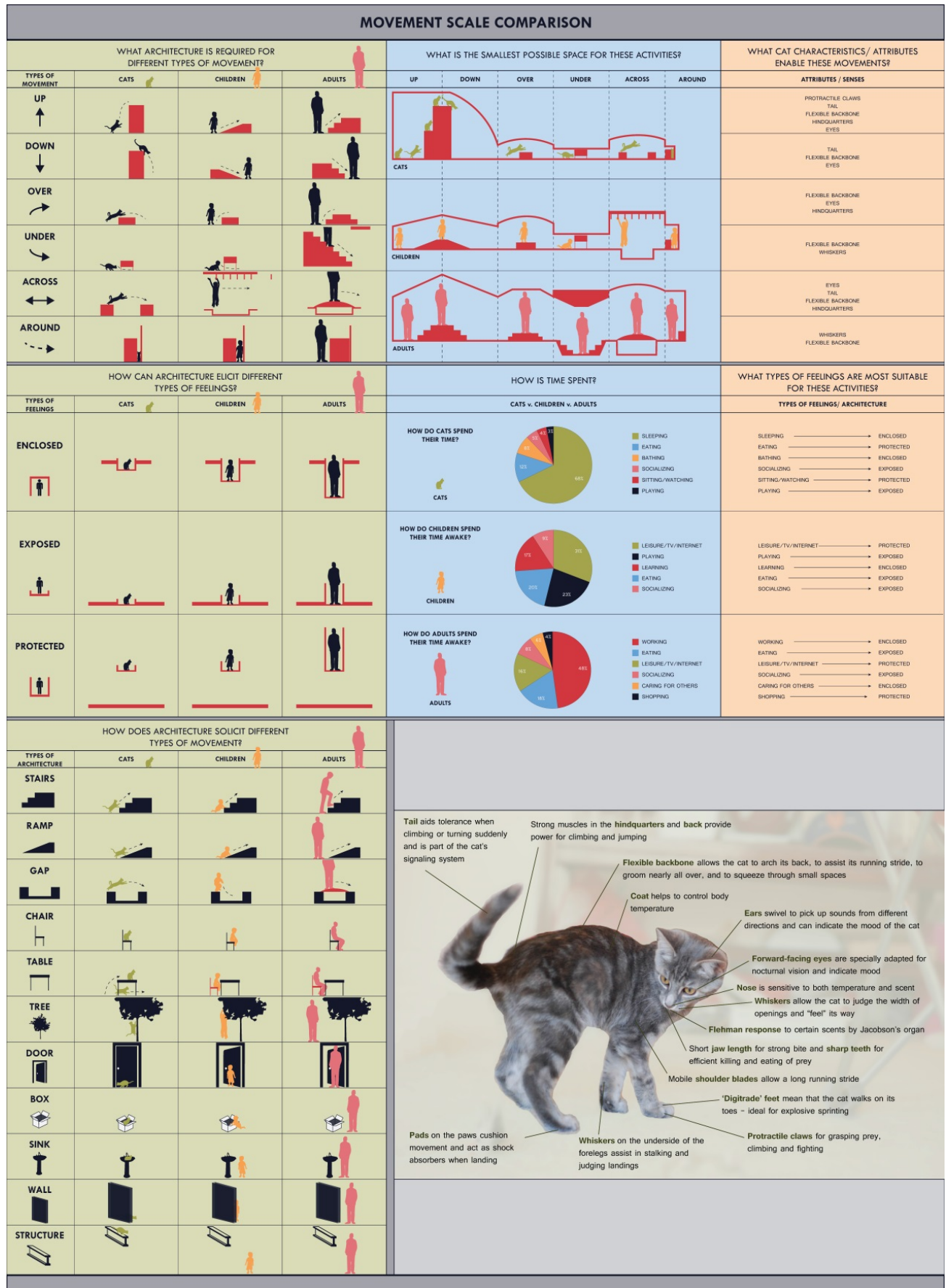


Figure 43: Spatial Analysis Chart

Sustainability Considerations

The green roof, as an amenity to tenants and retail customers, will be critical in the sustainability of this project. Although it will be environmentally beneficial, the space will also provide a unique identity and asset to the building making it appealing for customers and potential tenants. High efficiency fixtures and systems will also contribute to the structure's sustainable design.

To encourage the use of more sustainable modes of transportation, bike parking will be provided at the rear of the building instead of parking spots. This will contribute to the LEED Certification. Other aspects of the building that will contribute to its LEED Certification are carefully designed facades for passive heating and cooling and large, operable windows and skylights for optimal indoor air quality.

Chapter 5: Design Approach

Thesis Design Goals

My thesis goals are identified as: 1) Enrich the relationship between humans and cats; 2) Enhance the welfare and loving conditions of animals prior to adoption; 3) Develop an efficient and financially feasible model of holding, caring for, and adopting out companion animals; 4) Share the benefits of the feline-human relationship and educate the general public; 5) Develop a new building typology that can be duplicated and implemented throughout the world.

Discussion of Conceptual Design Strategies

My design will seek to address three major areas that are relevant to the thesis. They are the role of poche or residual space, specifically in the way the cats circulate vertically through the building, the cat café space, and the façade designs along 14th Street and the alleyway (Figure 44). Woven within the three main areas of attention are goals of layering, which will serve to create a sense of curiosity and mystery for what lies on the other side.

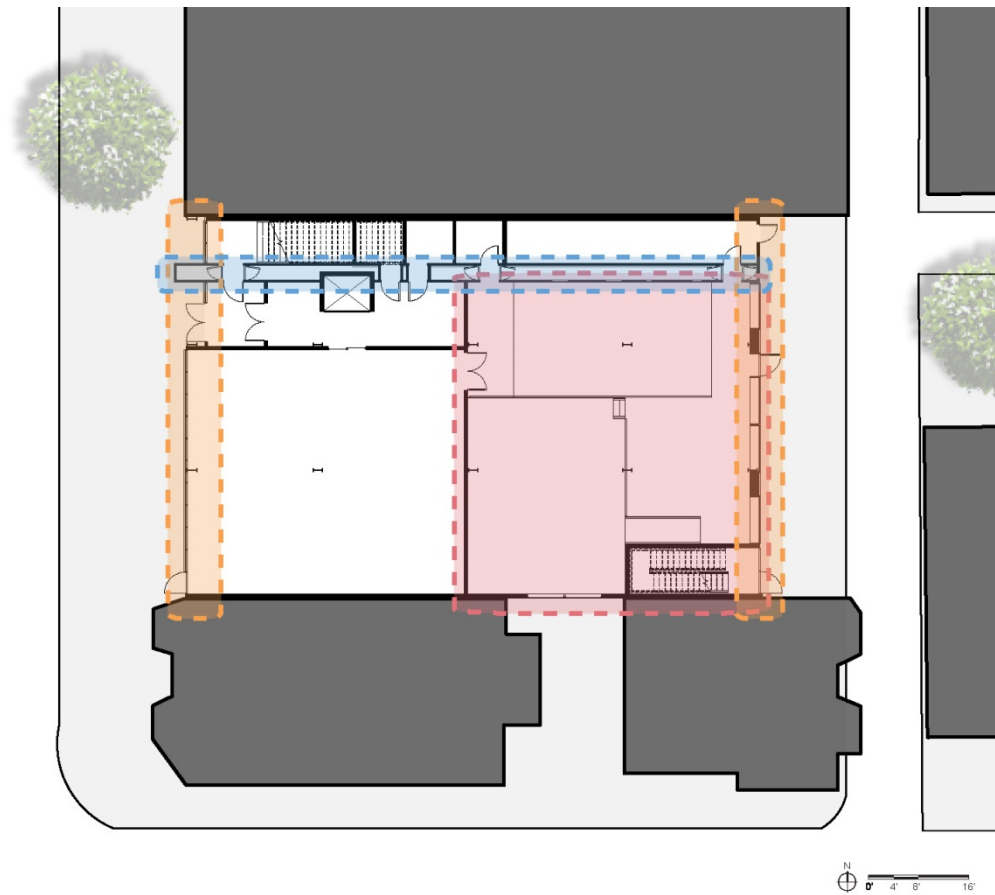


Figure 44: Areas of Interrogation

The section perspective shows the spaces in my building (Figure 45). 14th Street is to the left side and the alleyway is to the right. The distribution of building uses in general is standard, but the interest lies in the areas of feline and human interaction (Figure 47). The building is layered with the stair along the North wall, the cat wall alongside that, and then areas of engagement dispersed through the main space (). To make this building a draw for members of the community and visitors, there are areas where cats are off-limits (Figure 46). This is also to comply with health regulations.



Figure 45: Section Perspective



Figure 47: Building Program Distribution

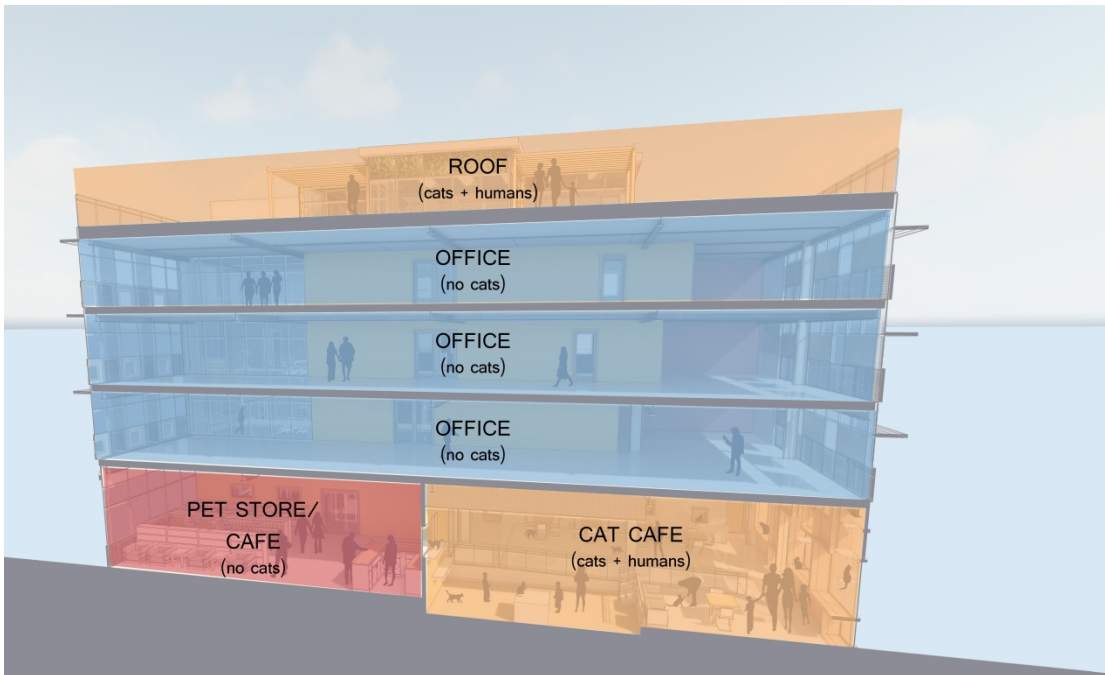


Figure 46: Human v. Cat Spaces



Figure 48: Transverse Section Layers

Conceptual Overview

The building plan will be arranged to allow optimal usage of the west-facing and east-facing facades. The west façade is along 14th Street NW, which will represent the primary face for the retail tenant space. This ground floor façade will be heavily glazed and allow those passing by to see into the combined café and cat space. The building lobby and core (consisting of a staircase and elevator) will be located towards the center of the building along the north partition wall to make sure that the building faces with access to light and visibility can be best used by the tenants (Figure 49). The main building core will have a skylight at the top, to allow for light to filter down into the lower floor of the building. The light-filled stairway will promote a pleasant and airy experience for those users traveling up to their office space. All this will be achieved while staying within the fire safety rating criteria.

Although the east façade faces towards an alleyway and residential townhomes, it is still important to keep this façade open for tenant use (Figure 50). As is seen in Figure 49, there is a break in the buildings bordering the site on the south side. This presents a design opportunity to get in as much light as possible to the useable spaces. This concept is supported by an open floor plan and high ceilings.

There will be three tenants in the building. The ground floor of 5,194 square feet will be occupied by a combined cat café and pet store that contributes a unique retail space to the pedestrian-friendly environment. This tenant space will be divided into two main parts. The first area will contain the pet store and food service area. This space will be off-limits to the animals to allow for anyone wishing to just enjoy the café to do so, as well as to allow those looking to buy supplies or toys for their pets to



Figure 49: Ground Floor Plan

do so without needing to interact with the animals. This separate space will help to keep the retail space open to a larger customer base and for those who are allergic or dislike cats to be in a separate, cat-free environment. The second main part of this retail space will be where the cats can roam free (the cat café). There will be seating, TVs, free Wi-Fi, books, and games for people to use as they please. This will be a space for those to come and work, relax, socialize and eat, and will also be a friendly space for children.

The three stories of office above will each have a square footage of 5,274 square feet (Figure 50). With the bonus density awarded through the zoning regulations of the ARTS Overlay District, the building is able to increase its FAR to 3.4.

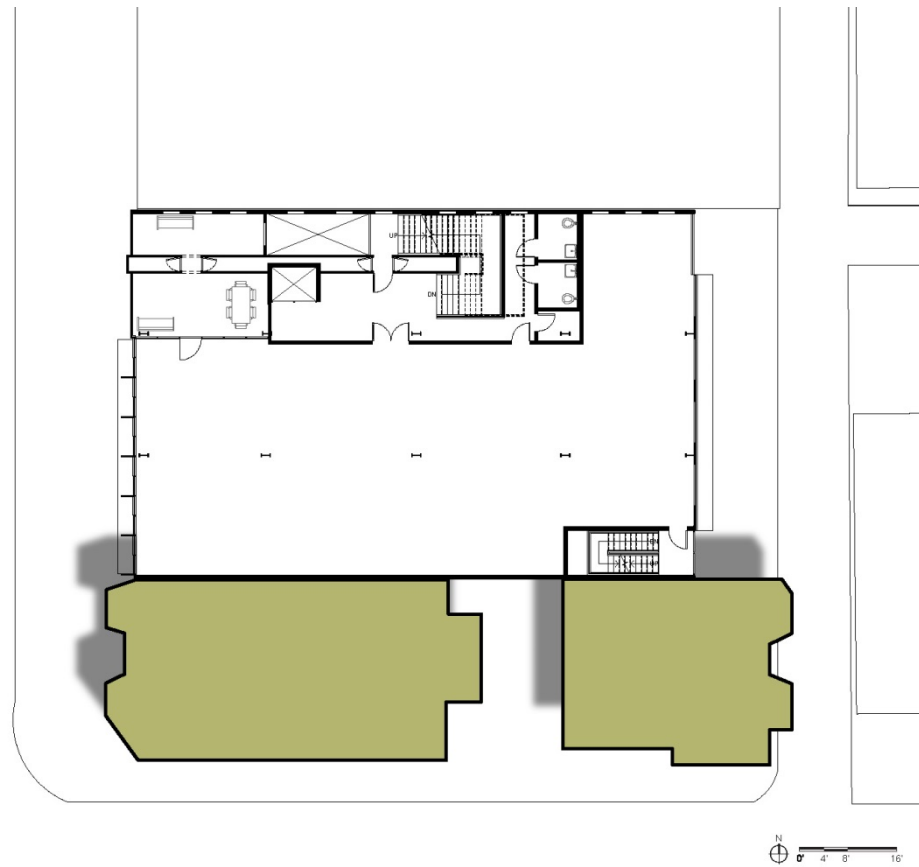


Figure 50: Typical Office Floor

The general floor design will be based around an open floor plan. This will allow for light from the west and east facades, as well as a portion of the southern façade to enter and penetrate throughout the space. Workplace design is rapidly transforming to include spaces that are more geared towards collaboration and the sharing of ideas. This reduces the need for a large number of walls and independent office spaces. It is up to the tenant how they will organize their space, but the design of this building will be conducive to open work spaces. There will be a separate room provided along the northwest corner of the building, adjacent to the cat wall. This room will be designated for use for office tenants who wish to interact with the cats during the workday while still completing their work.

The bathrooms will be located around the main core, along the northern wall of the site, in an effort to keep them centrally located, as well as keep the glazed facades open for work spaces. Each of the office stories will have floor-to-floor heights of 10 feet, with the retail space having a floor-to-floor height of 15 feet. The high ceilings and the large amount of windows will be appealing for tenants because they provide great work environments and are easily customizable.

Since the transportation core will be centrally located, the office floors will have direct access to the café space. They will easily be able to go downstairs and get coffee or a snack without having to leave the building. Since the food service area will be separate from where the cats are, anyone wishing to just stop in for a cup of coffee will not be forced to have any interaction with animals.

As mentioned earlier, the building will be made unique through the integration of a cat café retail tenant. This space will be particularly designed with the users in mind.

For example, how can a space be created that will be suitable and comfortable for cats, children, and adults? This is the main consideration for the Feline Human Ecosystem. As is alluded to with the name of this development, the project will be designed with a special emphasis on the cat. This may limit interest in the project, but giving the building a strong identity will help to assert its presence in the community and to make it a destination for many, besides just the local community. It will also serve as an educational reminder of the issues of animal welfare.

In keeping with the recognition that the building cannot be completely cat-friendly, the cats will be primarily contained to the ground floor retail space in the cat café. However, roof space will be provided as an amenity to all building users. The development of roof terraces is common in the area and many adjacent multi-family buildings provide a roof deck with a pool. To support the building's LEED Certification, a green roof will be constructed. This will help reduce the quantity and rate of stormwater runoff.

To turn this roof into something more appealing for the building users, there will also be a small enclosed pavilion space for use by workers and building tenants as a meeting space. The seating areas can be used as communal dining spaces at lunch time or by those visiting the retail space who wish to interact with the cats on the roof. The green roof space will be occupiable by the cats and watching them move around and play will be a form of entertainment for everyone. They will be equipped with collars so they will be contained to the space.

There will also be a way for the cats to travel up through the building to get to the roof. This space will be designed with maintenance in mind, will be placed alongside the main staircase, and will be referred to as the “cat wall”.

Poche/ Residual Space

My conceptual design strategy involves providing opportunities to maximize the space for humans and for cats. For example, cats can fit into very small spaces and they often enjoy being enclosed. Are there places in typical building design where there is wasted or under-utilized space? One of my strategies is to utilize the poche as efficiently as possible. This will include allowing cats to enter these smaller “wasted” spaces. One challenge to address with this is to make sure that the area can be



Figure 51: Main Stair

accessed for maintenance and cleaning.

The primary application of addressing this poche space is the role of the staircase throughout the building. Studying the way the cats get up to the roof from the ground floor where the actual “cat café” is leads to an opportunity to address the ideas of both poche and layering. To make a unique experience for the cats and the building users, the cats and humans will ascend alongside one another (Figure 51). The cats will be within their “cat wall”, where they will be connected visually, but not physically to



Figure 52: Cat Wall Section

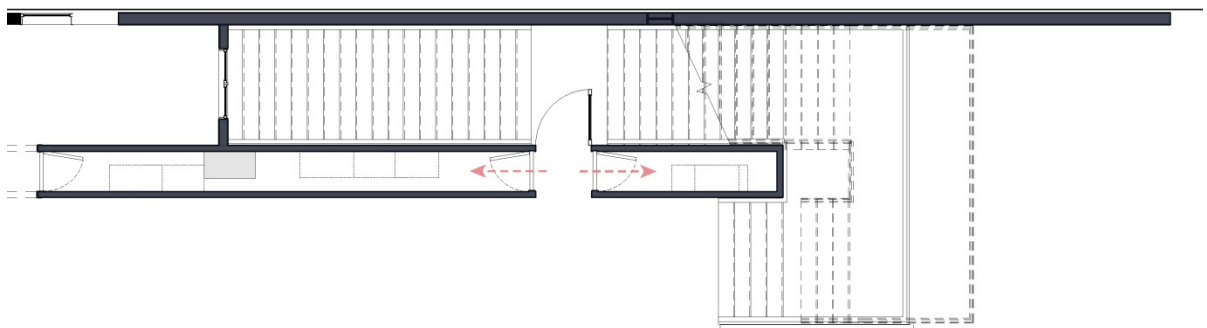


Figure 53: Cat Wall Plan

the humans (Figure 55). This is for health and safety reasons. The cat wall will have platforms to allow for the cats to play, climb, and jump (Figure 54). The cat wall is a continuous element which reveals itself throughout the building design, as well as on the west façade of the building onto 14th Street.

The cat wall will actually play a dual role, in that the walls of it will act as a fire-rated barrier. The walls will be made of solid glass block which can act as a rated enclosure material. The accessibility for maintenance purposes will be achieved by installing doorways on either side of the wall each time there is a puncture in the cat wall (Figure 53). The platforms within the cat wall also fold down for easier maintenance (Figure 52).

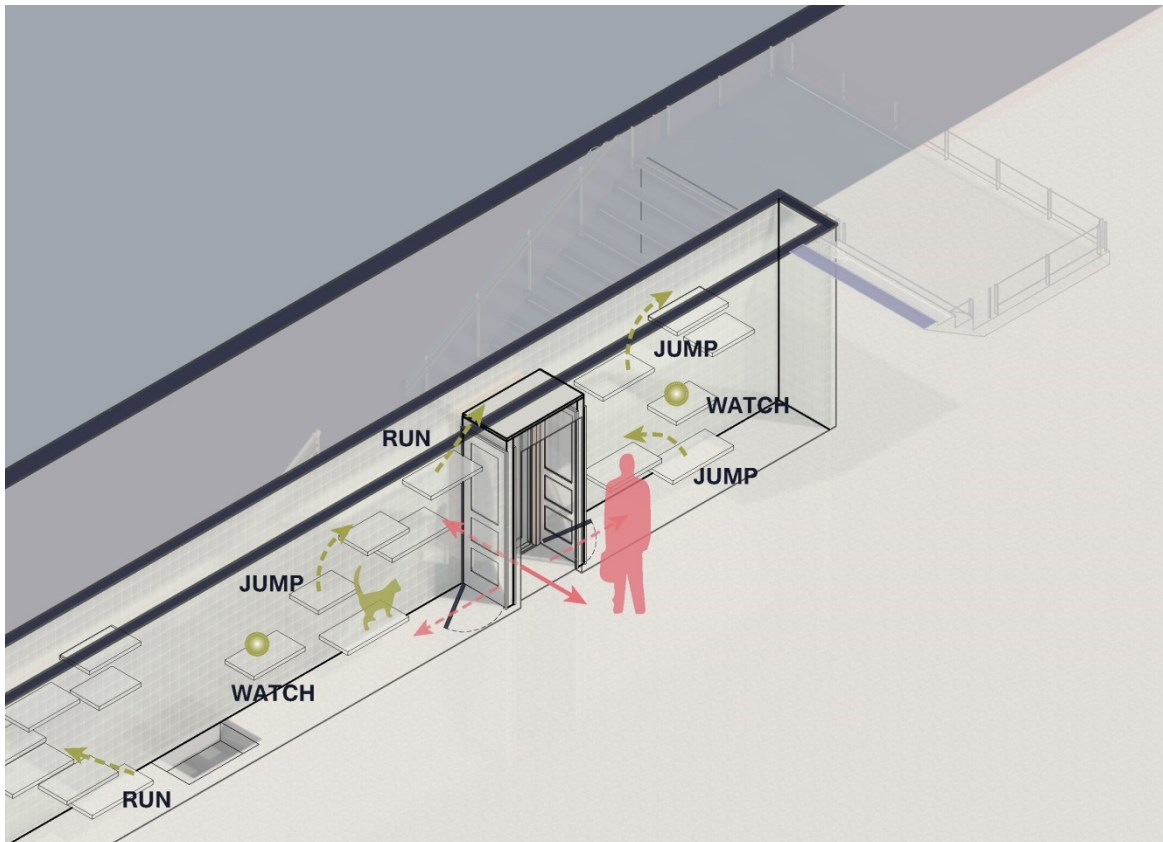


Figure 54: Cat Wall Axon



Figure 55: Inside Cat Wall

This staircase becomes a main element in my design as it acts as an atrium and viewing platform throughout the building. It is designed to create a sense of



Figure 56: Section through Cat Wall



Figure 57: Section through Main Stair

seduction and mystery as you travel up through the building. The path is partially revealed through transparent or translucent materials. The building section is designed to have visual connections from the ground level up to the skylights on the roof and to the landings on the different floors of the building (Figure 57). However, the path to reach the upper levels cannot be completely seen from the base of the steps on the ground floor.

Cat Cafe

Another main area that I identified as key in developing a relationship between humans and cats was the cat café area itself. This area is designed with the cat and human in mind and their opportunity for interaction. There will be plenty of opportunities for seating as well as the need for socializing, playing, working, and eating. On the other hand, this space has been designed with the cat in mind, taking into consideration platforms for watching and open space for running, play, climbing



Figure 58: Cat Cafe Space

and jumping. These platforms can be seen in the punctures along the interior of the east façade, as well as the cat wall portion that is in the cat café (Figure 58).

When you enter the building you first move into the building and enter the regular café space where cats are not permitted (). However, there is a layering effect where phenomenal transparency is utilized beginning on the exterior of the building and moving into the café space and beyond that into the cat café. Once entering the cat café you move into the space, down the ramp and around to the lower level, which can be used as an education and play space. This is where field trips can be held or presentations given about animal welfare and behavior.



Figure 59: Cafe

Facade

Another area where we can look to emphasize and consider the relationship between cats and humans is the façade. How should the façade be designed to reveal the uses and purposes of the building? How apparent should the presence of cats be from the

street? The façade will be designed to reveal the cat wall along the street on 14th Street (Figure 60). Aside from that, the façade will have a band above the ground level storefront windows which will allow for the building name to be presented. There will also be operable windows included on the ground level and in the office spaces to increase indoor air quality (Figure 62). Kalwall will be utilized on the portion of the façade which holds the circulation, building core, and office room which is open to cats and humans.



Figure 60: 14th Street Elevation



Figure 62: West Elevation



Figure 61: East Elevation

Roof

Another strategy is to think about the human relationship to cats and to provide both physical and visual layers that connect the three main users: cats, children, adults.

These layers can be considered throughout the building envelope. I plan to provide an amenity space on the roof. This will consist of an interior meeting room to be used by anyone in the building. The remaining roof space will be a green roof and will be open to the elements. This space will be designed for the cats, and will allow them to experience the sun, fresh air, and to satisfy a key component of their diet: grass (Figure 63). An intermediate layer will exist in which humans will have the opportunity to enter the cat-only space for interaction. This will be delineated by having a paving material and will be partially covered to allow for a dry, shady spot for people and cats to come together (Figure 64). There will also be outdoor seating opportunities provided.



Figure 63: Rooftop View

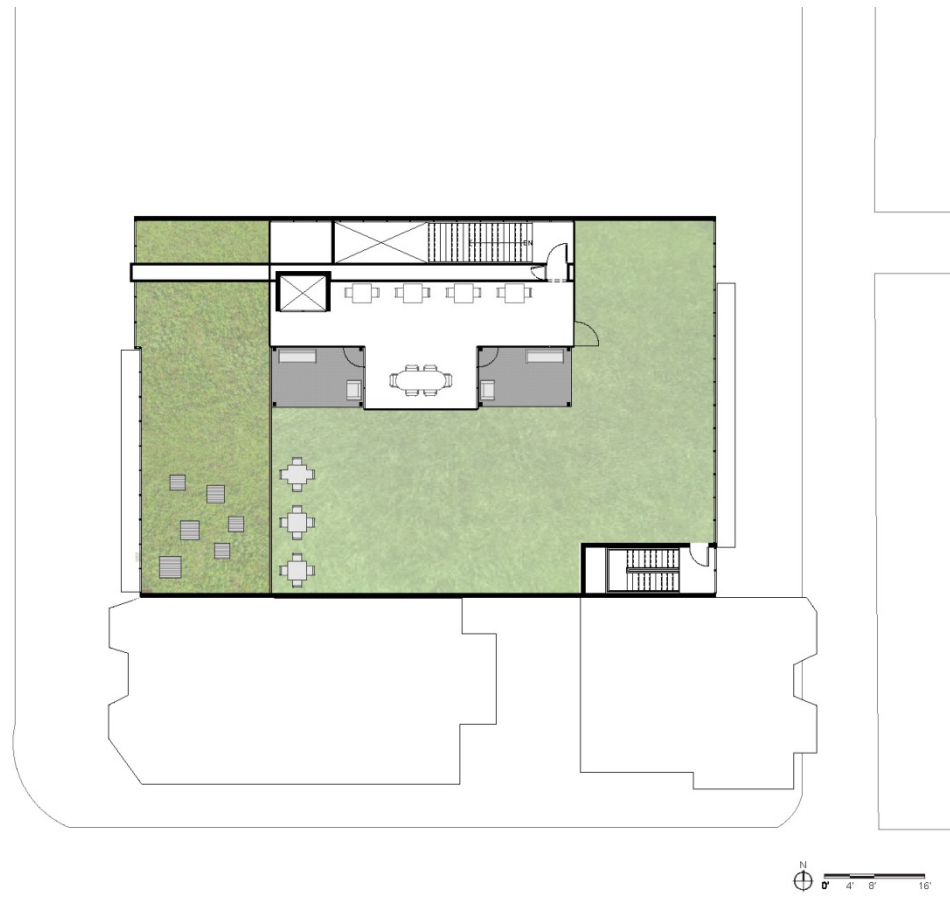


Figure 64: Roof Plan

Alternative Schematic Concept Analysis

Prior to arriving at a final design scheme, there were several other alternatives identified and tested. The series below represents four of the initial concepts that were recognized (Figure 65). Each tries a different disposition of the main human stair, cat wall, and elevator components.

The final concept was selected to move forward with because of the cat human relationship while moving up through the building. It also allows for the components at the building core to be grouped in a way that maximizes the useable floor area on each office floor.

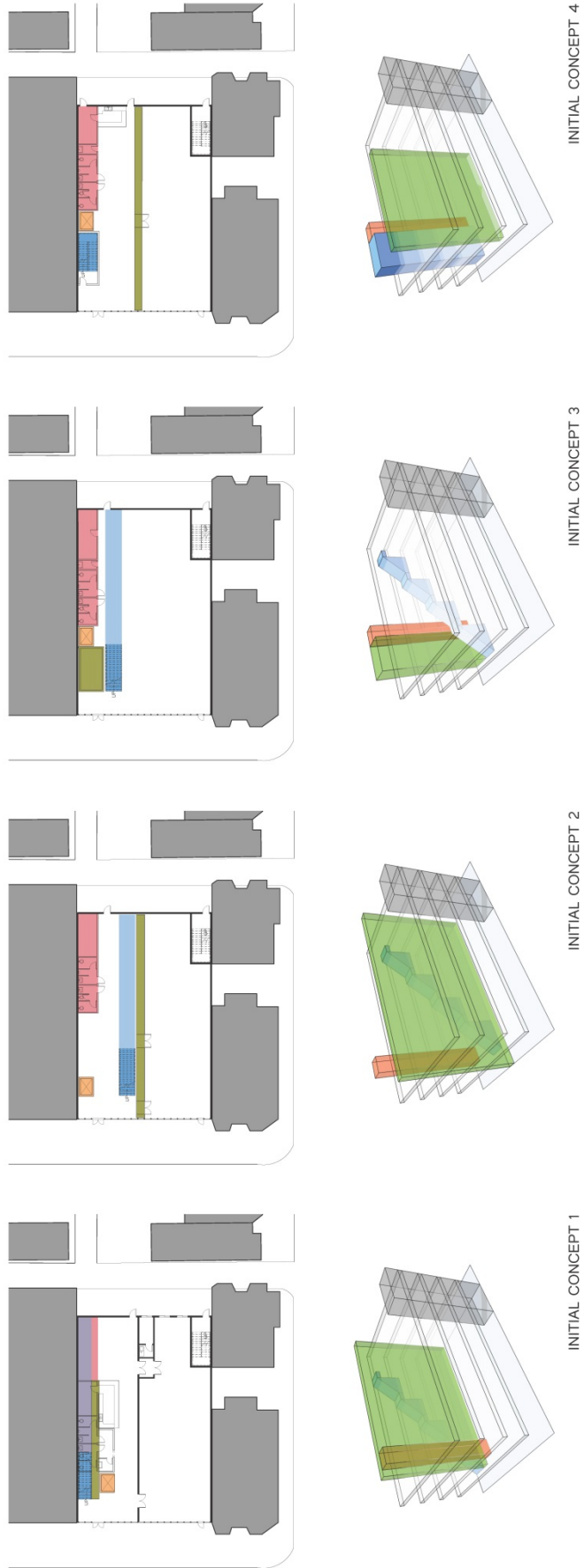


Figure 65: Initial Concept Illustrations

Chapter 6: Conclusions

Summary of Critique Provided at B0

The first opportunity to discuss my ideas for this thesis was at the B0 ('Thesis Match'). I had many interesting conversations with the faculty members as well as useful feedback, which is taken into consideration when moving forward with this work. One of the main comments I received at this meeting was that my ideas were too focused on cats and I needed to do a better job of tying in the role of architecture.

Summary of Critique Provided at B1

The B1 Meeting was the point at which I was still trying to determine a program and site so there was a very involved discussion with my committee about the direction I should go in. There were also a number of suggestions relating to some programmatic elements which may be suitable for inclusion. For example, there was a suggestion to provide services for vaccinations and neutering. There was also a suggestion to consider the ownership structure and funding.

Summary of Critique Provided at B2

The B2 feedback asked that I make a more specific argument for choosing Washington, D.C. It was also suggested that I do research on design precedents for general themed cafes. I was advised to think about the square footages attached to each program component, programmatic relationships, and methods of income generation for the cat café.

Summary of Critique Provided at B3

During the B3, I was advised to think more sectionally about the building design and not think about the office space in a conventional manner. I was also tasked with introducing and making use of the rooftop space. This is where my committee suggested that I think more creatively about the design opportunities, ways to allow for light to enter the building, and reconsider the location of the building core. It was also a good time to identify a better argument for why this thesis is important.

Summary of Critique Provided at B4

Here, I was asked to be more sculptural and spatial in the design exploration and to think of a more clever way to weave the office and retail space. I was also encouraged to carefully consider how to design and transform the residual space. More had to be done to design the vertical surfaces and the roof space as an amenity. Consideration of the digital presentation and ways to make it less text-heavy was also suggested.

Summary of Critique Provided at B5

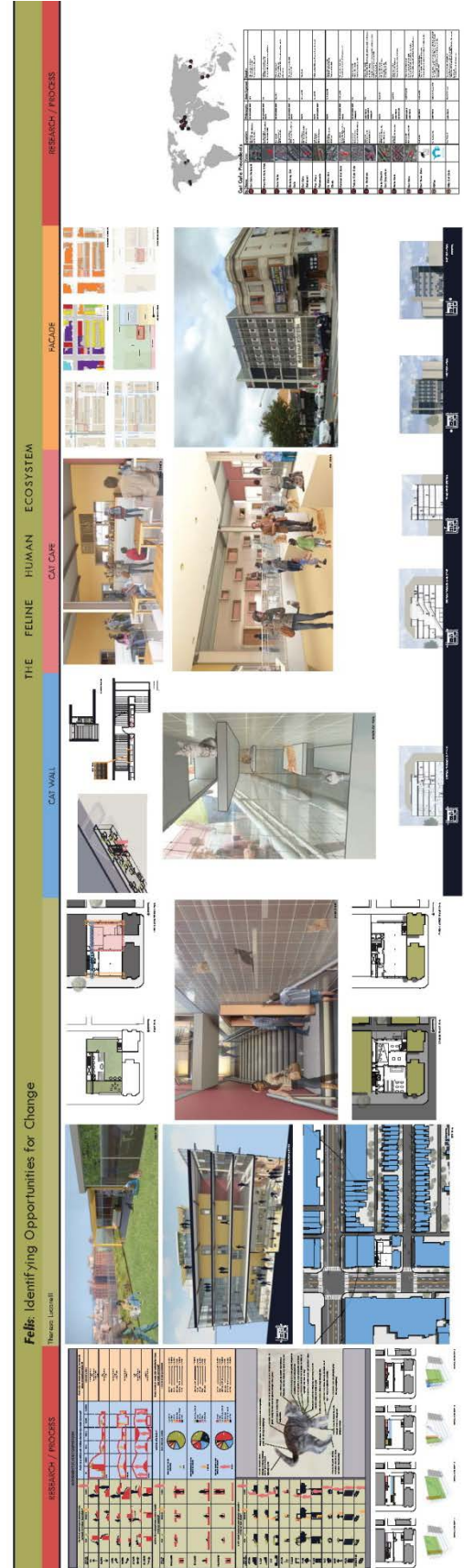
The main thing to focus on after the B5 was drilling down to set the building parti. From here, the spaces could be designed in further detail. Before the B5 Meeting I had altered my building parti relating to the building more elements. I was encouraged to go back and consider the previous concept since this one showed more of the poetics and built upon my spatial analysis drawings.

Summary of Critique Provided at B6

The primary feedback from my final thesis presentation was about the level of detail shown in my design. I was tasked with designing the spaces in more detail and designing the west façade with more consideration for what the building holds.

Appendices

See below for the overall final presentation board layout.



Bibliography

After dark, the dirty work at Disneyland begins - Los Angeles Times Retrieved 5/11/2014, 2014, Retrieved from <http://articles.latimes.com/2010/may/02/business/la-fi-cover-disney-20100502>

Alger, Janet M., Alger, Steven F. (2003). *Cat culture: The social world of a cat shelter*. Philadelphia: Temple University Press.

This work contends that the anti-social cat is a myth; cats form close bonds with humans and with each other. In the potentially chaotic environment of a shelter that houses dozens of uncaged cats, this work reveals a sense of self and the building of a culture.

Alley Cat Allies' Feral Friends Network | Alley Cat Allies Retrieved 6/16/2014, Retrieved from <http://www.alleycat.org/feralfriends>

Beadle, M. (1977). *The cat: History biology, and behavior*. New York: Simon and Schuster.

Beatty, C., & Anthony, E. (1964). *Facing the big cats*. Garden City, New York: Doubleday & Company, Inc.

Beauchamp, T. L., Orlans, B., Dresser, R., Morton, D. B., & Gluck, J. P. (2008). *The human use of animals: Case studies in ethical choice* (Second ed.). New York: Oxford University Press.

Beaver, Bonnie V.G. (1980). *Veterinary aspects of feline behavior*. St. Louis: Mosby.

Berger, J. (1980). Why look at animals? *About looking* (pp. 3-28) Penguin Books.

Bergler, R. (1991). *Man and cat: The benefits of cat ownership*. London: Blackwell Scientific Publications.

This book provides a lot of interesting background information on the relationship between humans and cats and how our view of cats has shifted over time. It covers topics such as the origin of cat domestication, our experience of cats through proverbs, stories, fairytales and culture, and there ways in which we characterize our relationship with cats through an observation of their behavior. Which experiences, emotions, values and desires govern one's life and well-being? How do we believe cats will help us reach or influence these envisioned goals? Portions of this book may become relevant later on in the design process in thinking about what qualities humans look for in cats.

Boomgaard, P. (2001). *Frontiers of fear*. New Haven & London: Yale University Press.

Boudreau, J. C., & Tsuchitani, C. (1973). *Sensory neurophysiology*. New York: Van Nostrand Reinhold Company.

The primary purpose of this book is to discuss the details of sensory, visual, and auditory systems, as well as neuroanatomy and neurophysiology. However, a brief chapter is devoted to a discussion of the behavior of *Felis Catus* as a species. The species behavior of the domestic cat is also compared to that of the Felidae family. Topics of examination include play behavior, fighting, grooming, hunting, eating, and the association of cats with humans.

Bradshaw, John. (2013). *Cat sense* how the new feline science can make you a better friend to your pet.

Cats have been popular household pets for thousands of years, and their numbers only continue to rise. Today there are three cats for every dog on the planet, and yet cats remain more mysterious, even to their most adoring owners. In *Cat Sense*, renowned anthrozoologist John Bradshaw takes us further into the mind of the domestic cat than ever before, using cutting-edge scientific research to explain the true nature and needs of our feline friends. Tracing the cat's evolution from solitary hunter to domesticated companion, Bradshaw shows that cats remain independent, predatory, and.

Caras, R. A. (1989). *A cat is watching*. New York: Simon and Schuster.

The book is broken up into chapters about a cat's senses. It is the author's assertion that cats employ more than the standard five senses. There is very interesting information about how a cat uses its five basic senses, as well as other innerworkings of their brain and key characteristics which make the animal unique and special.

This discussion of important features of a cat will be useful in identifying how cats move and think, which will set a basis for how to approach the design process.

Case, L. P. (2003). *The cat: It's behavior, nutrition & health*. Ames, Iowa: Iowa State Press.

This book includes detailed information about the nutrition, behavior and health of cats that would be useful for a pet owner as well as to someone studying their behavior and movement in various contexts. There are clear and concise descriptions of every feature of a cat that would be relevant to understanding their temperament.

Cooke, A. O. (1920). *A book of dovecotes*. London: T.N. Foulis.

This book provides information about dovecotes, which is relevant to precedent analysis.

Fact sheets 2013 Retrieved 5/12/2014, 2014, Retrieved from

<http://www.americanhumane.org/assets/right-margin-features/linksets/fact-sheets-2013.html>

Feral cats FAQ | ASPCA Retrieved 5/11/2014, 2014, Retrieved from

<http://www.asPCA.org/adopt/feral-cats-faq>

Hansell, M. (2005). In Willmer P., Norman D. (Eds.), *Animal architecture*. New York: Oxford University Press.

Hansell, M. (2007). *Built by animals*. New York: Oxford University Press.

Heffner, R. S. (2004). Primate hearing from a mammalian perspective. *The Anatomical Record Part A: Discoveries in Molecular, Cellular, and Evolutionary Biology*, 281A(1), 1111-1122. doi:10.1002/ar.a.20117

This review discusses hearing performance in primates and selective pressures that may influence it. The hearing sensitivity and sound-localization abilities of primates, as indicated by behavioral tests, are reviewed and compared to hearing and sound localization among mammals in general. Primates fit the mammalian pattern with small species hearing higher frequencies than larger species in order to use spectral/intensity cues for sound localization. In this broader comparative context, the restricted high-frequency hearing of humans is not unusual. All of the primates tested so far are able to hear frequencies below 125 Hz, placing them among the majority of mammals. Sound-localization acuity has been determined for only three primates, and here also they have relatively good localization acuity (with a minimum audible angle roughly similar to other mammals such as cats, pigs, and opossums). This is in keeping with the pattern among mammals in general, in which species with narrow fields of best vision, such as a fovea, are better localizers than those with broad fields of best vision. Multiple lines of evidence support the view that sound localization is the selective pressure on smaller primates and on other mammals with short interaural distances for hearing high frequencies. © 2004 Wiley-Liss, Inc.

Hoffman, P. (July 26, 2013). 14 ways your cat improves your health., Care2, Inc., 2014, Retrieved from <http://www.care2.com/causes/14-ways-your-cat-improves-your-health.html>

- Hoskins, J. D. (1995). *Veterinary pediatrics: Dogs and cats from birth to six months* (Second ed.). Philadelphia: W.B. Saunders Company.
- Hunter, L. (2006). *Cats of africa: Behavior, ecology, and conservation* The Johns Hopkins University Press.
- Irvine, L. (2004). If you tame me understanding our connection with animals.
Narrowing the gulf between humans and animals.
- Lloyd, J. (November 1, 2010). Cats can make owners happier, healthier and gentler., USA TODAY, 2014, Retrieved from http://usatoday30.usatoday.com/yourlife/pets/cats/2010-11-02-whycats02_ST_N.htm
- Television, N. G. (Producer), & Kemp, D. (Director). (2008). *Science of cats*. [Video/DVD] National Geographic Channel.
More than 600 million claim residence in households across six continents ... and now they may have dethroned dogs as the most popular pet on earth. An exterminator, fierce hunter and favorite companion, aloof and affectionate at the same time, the cat leapt out of the wood and adopted us on its own terms thousands of years ago. But how did man and beast form their unconventional relationship? From mummified cats unearthed in Egypt to bizarre genetic mutations discovered around the globe.
- Lambton, L. (1985). *Beastly buildings*. London: Jonathan Cape Ltd.
Provides examples of precedents for existing structures that have been built for animals. Breaks the types of structures into: sport (dog kennels, stables), stomach (food- dovecotes, cowsheds, dairies), observation (zoos, aviaries), and death.
- Macdonald, D. W. (1987). *Social dynamics, nursing coalitions and infanticide among farm cats, felis catus*. Berlin: Paul Parey.
- Mahler, R. (2009). *The jaguar's shadow: Searching for a mythic cat*. New Haven & London: Yale University Press.
- Minter, R. (2011). *Big cats: Facing Britain's wild predators*. Scotland: Whittles Publishing Ltd.
- O'Farrell, Valerie, Neville, Peter, Ross, Christopher St. C., British Small Animal Veterinary Association. (1994). *Manual of feline behaviour*. Cheltenham, Gloucestershire: British Small Animal Veterinary Association.
This book provides a good summary of a cat's key senses, as well as their

learning theory and behavior. Based on the information presented, it seems more relevant for pet owners on how to can train their cats.

Payne, B. R., & Peters, A. (2002). *The cat primary visual cortex*. San Diego: Academic Press.

Pettersson, L. (1990). *Forelimb movements in the cat; kinetic features and neuronal control*. University of Goteborg, Goteborg Sweden). *Acta Physiologica Scandinavica*, 140(594)

Position statement on feral cat management | ASPCA Retrieved 5/11/2014, 2014, Retrieved from <http://www.asPCA.org/about-us/asPCA-policy-and-position-statements/position-statement-on-feral-cat-management>

Rogers, K. M. (1997). *The cat and the human imagination: Feline images from bast to garfield*. Ann Arbor: University of Michigan Press.

Rakover, Sam S. (2007). *To understand a cat: Methodology and philosophy*. Amsterdam; Philadelphia: John Benjamins Pub.

Rochlitz, I. (2005). The welfare of cats.

"This book, written by experts from the United Kingdom, the United States and Switzerland, presents up-to-date information on a broad array of topics. It covers recent developments in our understanding of cat behaviour, considers the ways in which cat welfare is assessed, and addresses the successes and failures of the relationship between cats and humans, including feline behaviour disorders. It also deals with the ever-increasing problem of stray and unwanted cats in shelters, the feral cat population, and the effects of housing, disease, nutrition and breeding on cat welfare."--Jacket.

Stray and feral cats | ASPCA Retrieved 5/11/2014, 2014, Retrieved from <http://www.asPCA.org/pet-care/virtual-pet-behaviorist/cat-behavior/stray-and-feral-cats>

Tabor, R. (1989). The changing life of feral cats (*felis catus* L.) at home and abroad. *ZOJ Zoological Journal of the Linnean Society*, 95(2), 151-161.

Fertility can be perceived at the level of both individual and population.

Historically, feline fertility is seen as untrammelled, but mating is circumscribed by long-term range patterns and densities. Control methods have changed from primarily euthanasia to include neutering of feral colonies. Urban geography can

affect interactions of feral with house cats. Social factors and physiological factors like the action of penile spines affect the outcome of potential matings.

Tabor, R. (2003). *Understanding cat behavior* David & Charles.

Together We Can See the World | LoveMeow Retrieved 9/1/2014, Aug. 21, 2014,
Retrieved from <http://lovemeow.com/2014/08/together-can-see-world/>

TNR at work - Disneyland finds balance with feral cats - Alley Cat Allies Retrieved
5/11/2014, 2014, Retrieved from <http://www.alleycat.org/page.aspx?pid=873>

Turner, A. (1997). *The big cats and their fossil relatives*. New York: Columbia
University Press.

This book discusses the anatomy of cats and the evolution of various species throughout history, with stress placed on the analysis and examination of fossils. However, there is more emphasis placed on the big cats, and although relevant to the understanding of domestic cats, is not directly applicable.

Turner, Dennis C., & Bateson, P. P. G., Cats '86. (1988). *The domestic cat : The biology of its behavior*.